TRBOnet Watch 1.9

User Guide

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ARCHITECTURE OVERVIEW

Architecture Overview

TRBOnet Watch includes two following logical components:

- Server software (TRBOnet Watch Server), which implements the MOTOTRBO™ protocols, manages connection to repeaters and stores data.
- Client tool (TRBOnet Watch Console), which presents data from TRBOnet Watch Server and allows monitoring and analyzing data traffic on IP Site Connect, Capacity Plus, Linked Capacity Plus и Connect Plus repeaters.

The client and server software can be installed on any desktop computer running Windows® 7 operating system.

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INSTALLING AND CONFIGURING TRBONET WATCH SERVER

TRBOnet Watch application has been designed to monitor your radio network. TRBOnet Watch Console can connect to repeaters specified in TRBOnet Watch Server Configuration. All activity on repeaters' slots will be displayed in TRBOnet Watch Console.

Installing Prerequisite software

To run TRBOnet RadioServer you need the following packages installed:

- SQL Server 2008 Express

To install Microsoft SQL Server 2008

1. Go to the Microsoft website: http://www.microsoft.com/express/Database/InstallOptions.aspx
2. Under the Database Only column click 32-bit or 64-bit (depending on your operating system type)
3. From the list of available languages, select the language of the necessary download.
4. Click **Download**.
5. After download completes, run the package and follow the prompts to complete the installation.

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To install TRBOnet Watch

1. To run the **TRBOnet Watch Setup**, double-click the **TRBOnet.Watch_v1.5.exe** file.
2. On the **Welcome** page, click **Next**.

TRBOnet Watch 1.5 Setup
TRBOnet
Digital Technologies
Welcome to the TRBOnet Watch 1.5 Setup Wizard
The Setup Wizard will install TRBOnet Watch 1.5 on your computer. Click "Next" to continue or "Cancel" to exit the Setup Wizard.
< Back
Next >
Cancel

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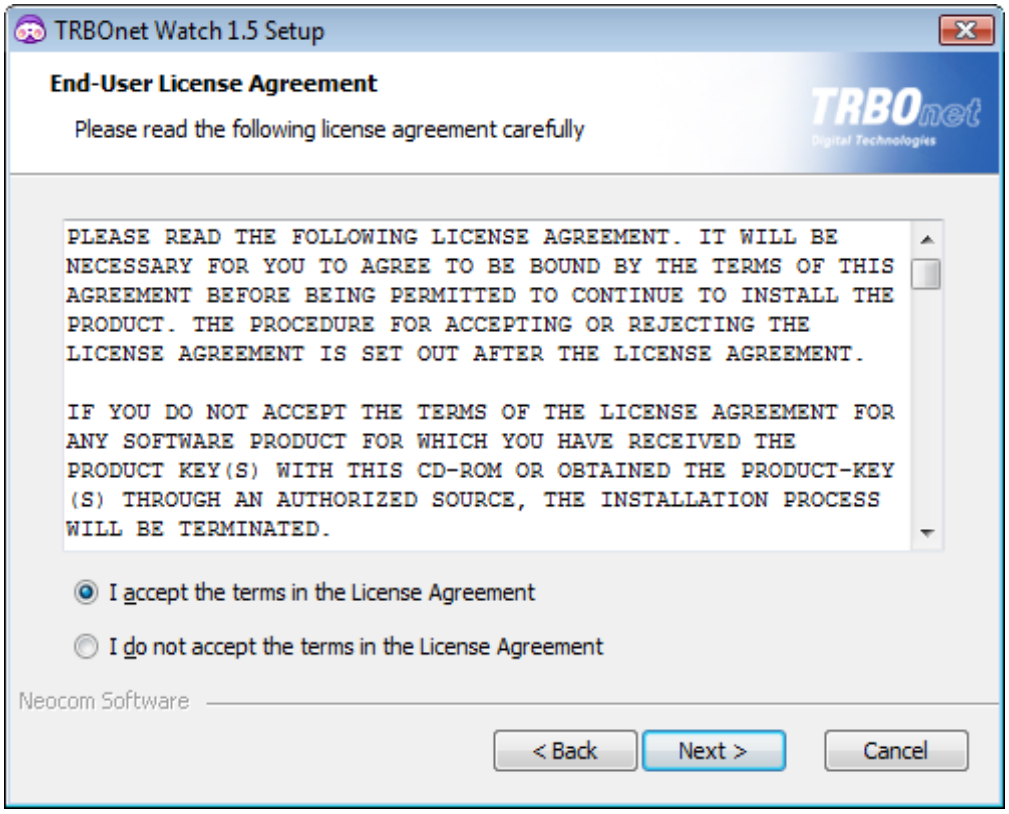
3. Read the end user license agreement. To proceed with the installation, you need to accept the agreement and click **Next**


TRBOnet Watch 1.5 Setup
End-User License Agreement
Please read the following license agreement carefully
TRBOnet
Digital Technologies
PLEASE READ THE FOLLOWING LICENSE AGREEMENT. IT WILL BE NECESSARY FOR YOU TO AGREE TO BE BOUND BY THE TERMS OF THIS AGREEMENT BEFORE BEING PERMITTED TO CONTINUE TO INSTALL THE PRODUCT. THE PROCEDURE FOR ACCEPTING OR REJECTING THE LICENSE AGREEMENT IS SET OUT AFTER THE LICENSE AGREEMENT.
IF YOU DO NOT ACCEPT THE TERMS OF THE LICENSE AGREEMENT FOR ANY SOFTWARE PRODUCT FOR WHICH YOU HAVE RECEIVED THE PRODUCT KEY(S) WITH THIS CD-ROM OR OBTAINED THE PRODUCT-KEY (S) THROUGH AN AUTHORIZED SOURCE, THE INSTALLATION PROCESS WILL BE TERMINATED.
I accept the terms in the License Agreement
I do not accept the terms in the License Agreement
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< Back
Next >
Cancel

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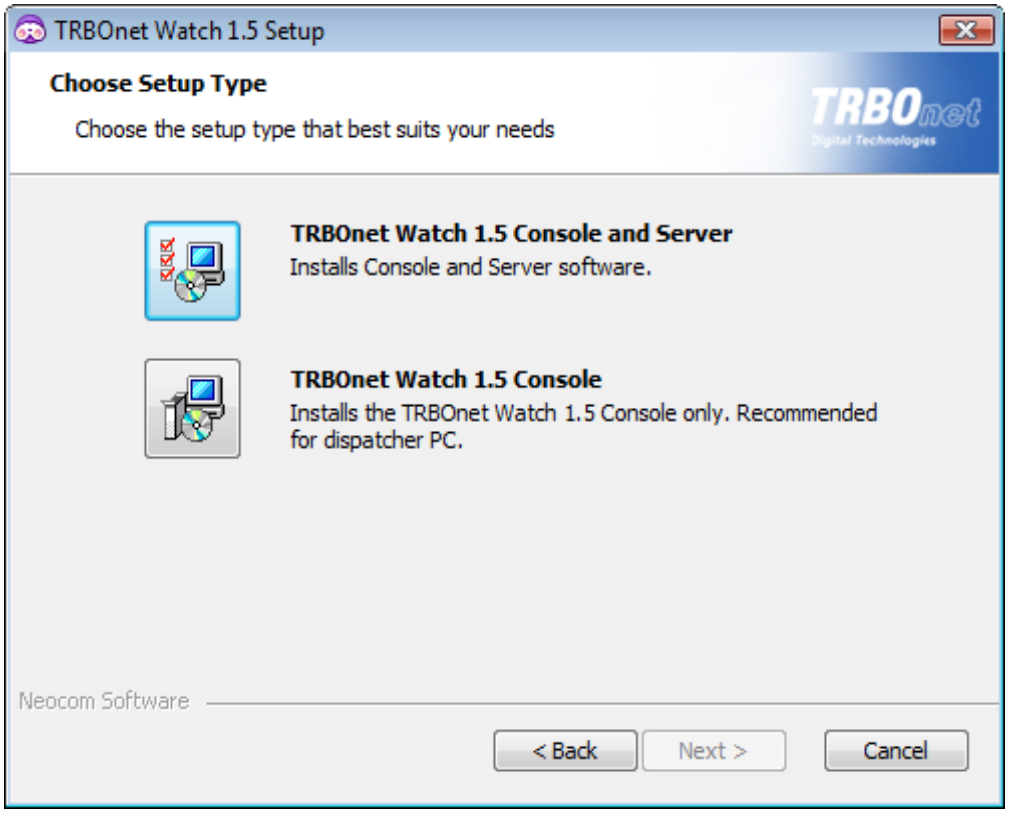
4. Select to install both Console and Server or the Console only (in case you will connect to an existing TRBOnet Watch Server).


TRBOnet Watch 1.5 Setup
Choose Setup Type
Choose the setup type that best suits your needs
TRBOnet
Digital Technologies
TRBOnet Watch 1.5 Console and Server
Installs Console and Server software.
TRBOnet Watch 1.5 Console
Installs the TRBOnet Watch 1.5 Console only. Recommended for dispatcher PC.
Neocom Software
< Back
Next >
Cancel

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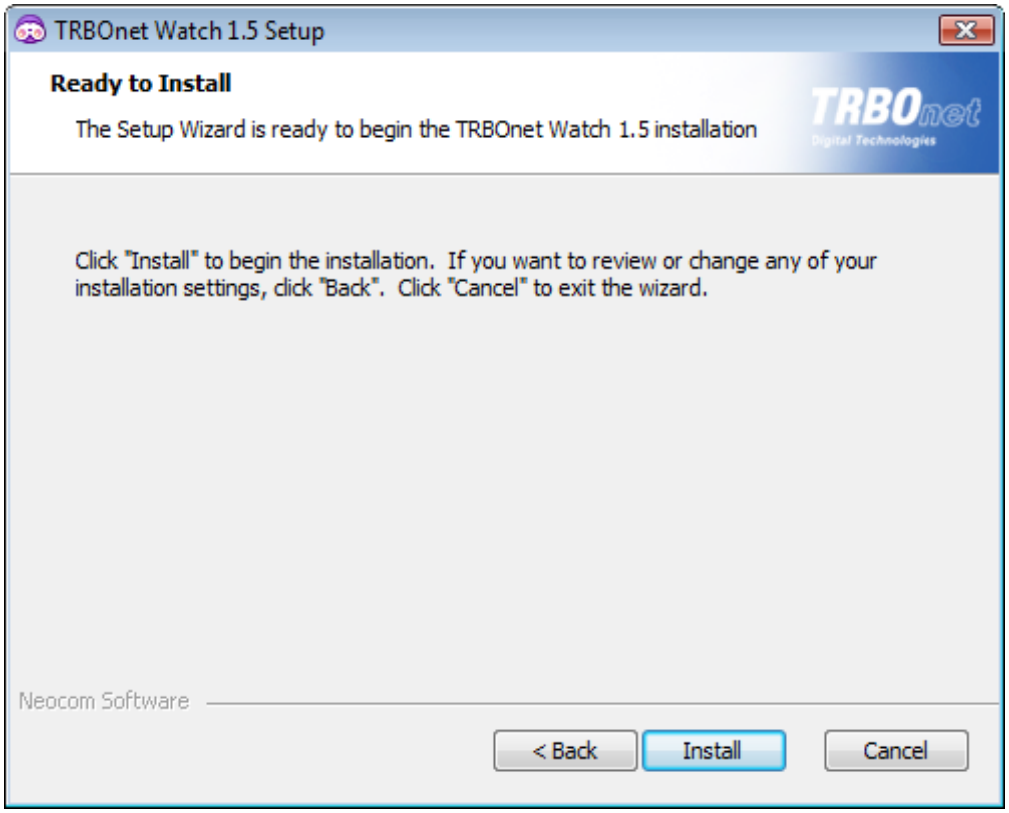
5. Click **Install** to start the installation.


TRBOnet Watch 1.5 Setup
Ready to Install
The Setup Wizard is ready to begin the TRBOnet Watch 1.5 installation
TRBOnet
Digital Technologies
Click "Install" to begin the installation. If you want to review or change any of your installation settings, click "Back". Click "Cancel" to exit the wizard.
Neocom Software
< Back
Install
Cancel

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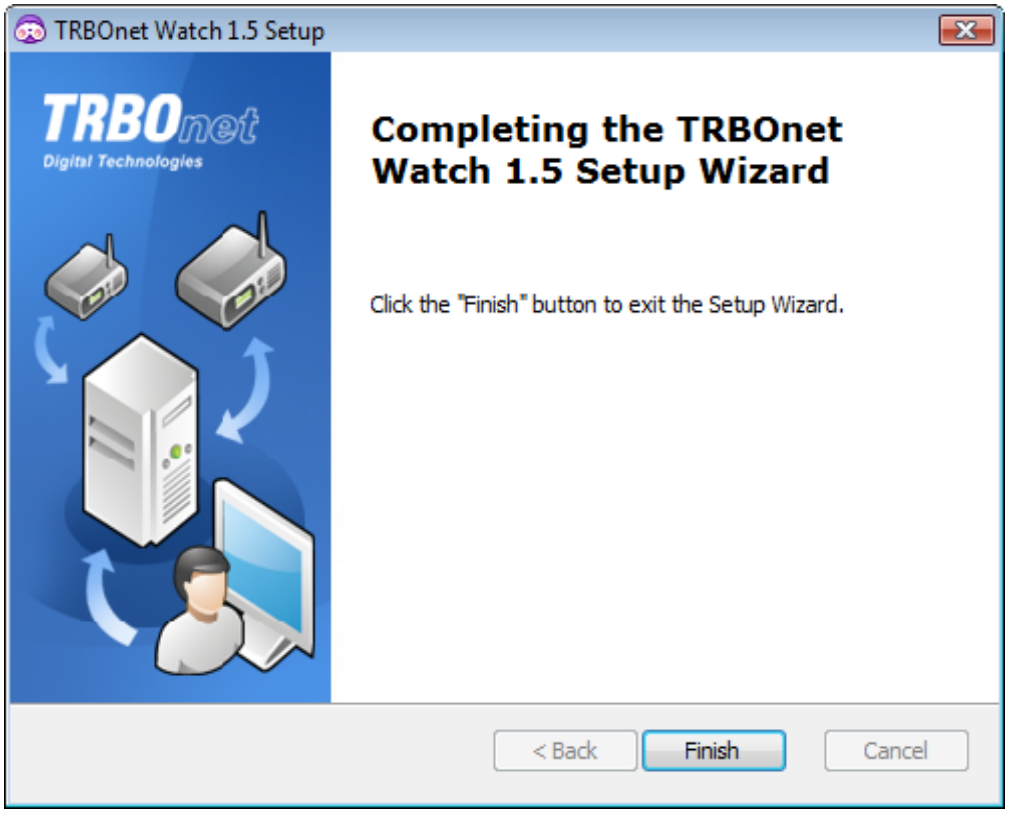
6. After installation completes, click **Finish** to exit the installation wizard.



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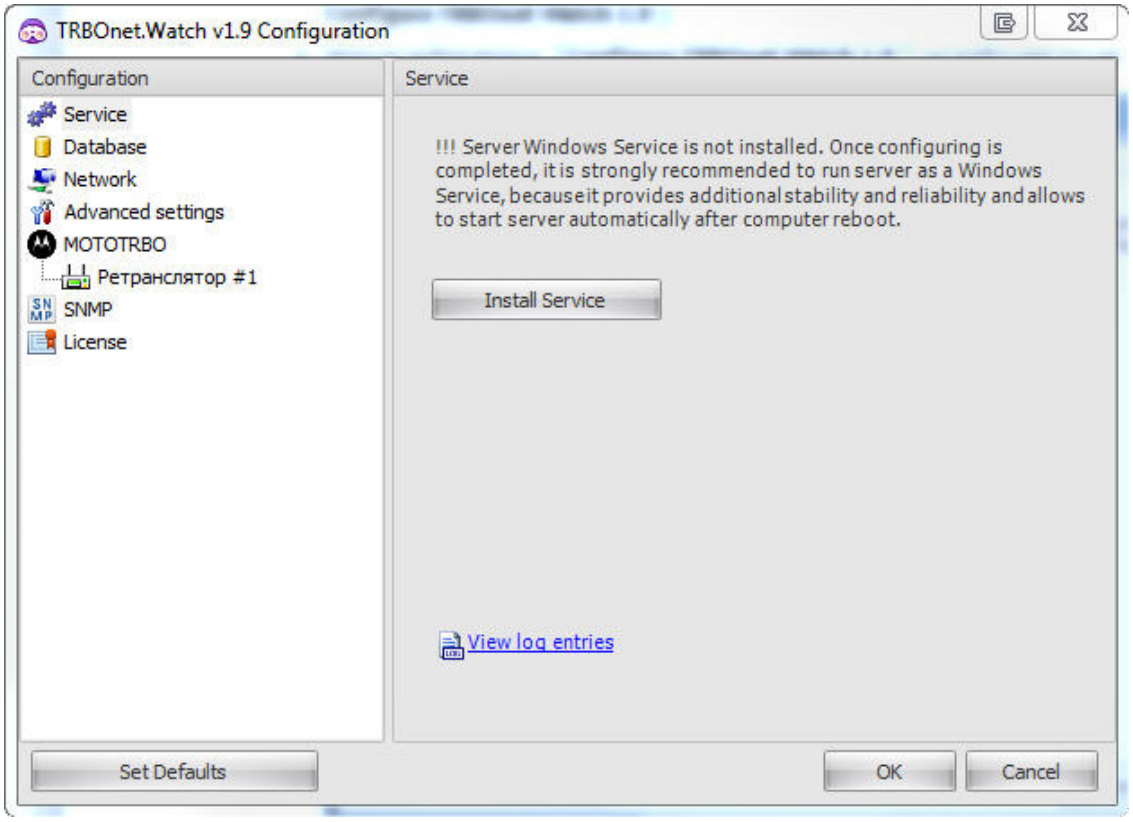
To configure TRBOnet Watch

To open **TRBOnet Monitoring Configuration** do one of the following:

- In the **Start** menu, select **All Programs | Neocom Software | TRBOnet Watch 1.0 | Configure TRBOnet Watch 1.5**
- Use the **Configure TRBOnet Watch 1.5** shortcut on your desktop



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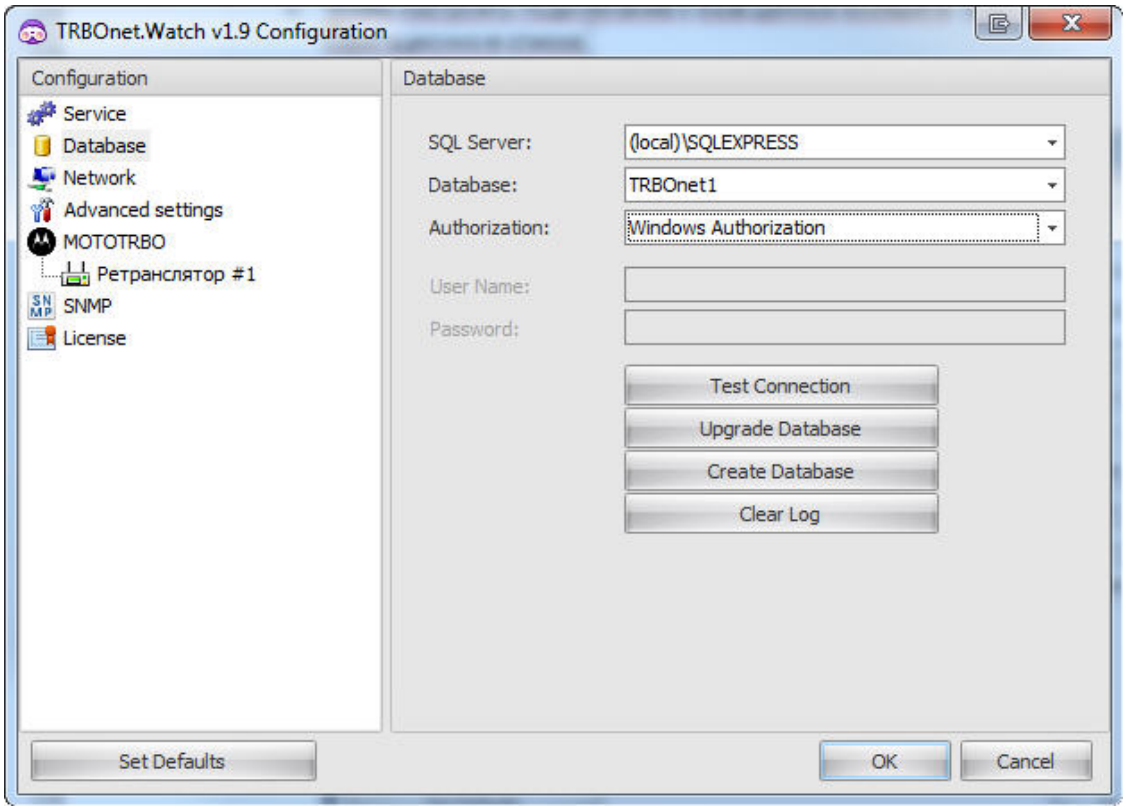
Connection to Database

TRBOnet Watch Server needs SQL Server Database to operate with.

1. To configure connection to database click **Database** in the Navigation Area.



2. Provide the following SQL Server connection parameters:

- **SQL Server** – name of the server (default is (**.\SQLEXPRESS**)
- **Database** – name of the TRBOnet RadioServer database (default is **TRBOnetWatch**)
- **Authorization** (You are recommended to use the default**Windows Authorization**,if you use the SQL Server Authorization you will need to specify user name **sa** and the password for the SQL Server administrative account you created while installing SQL Server.

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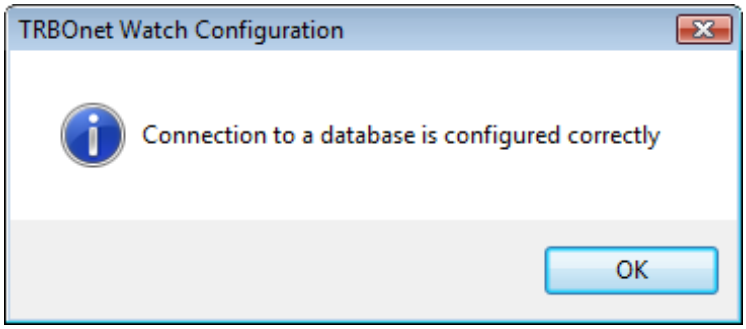
3. Click **Create Database** to create a new database or **Upgrade Database** to upgrade the existing database version.
4. Click **Test Connection** to check that connection parameters are correct. If parameters are correct, the following message displays:



If no error occurred, click **OK**. Connection to the TRBOnet RadioServer is configured successfully.

If an error occured, check and re-enter the connection parameters.

5. Click Clear Log to clear the database Log file. You may watch current Log size in the console's parameters.

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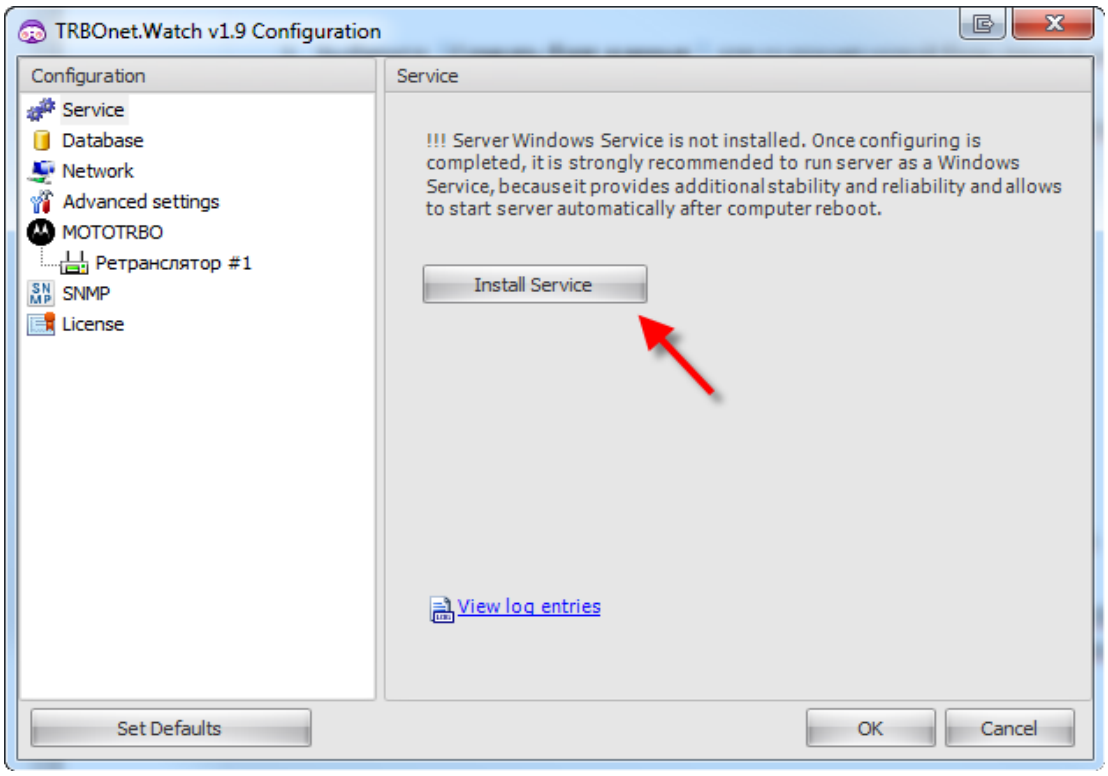
Service

TRBOnet Watch Server works as a Windows service which means it will automatically run on system start up.

To configure the service settings click **Service** in the Navigation Area.

TO INSTALL THE SERVICE

To install the service click **Install Service**.



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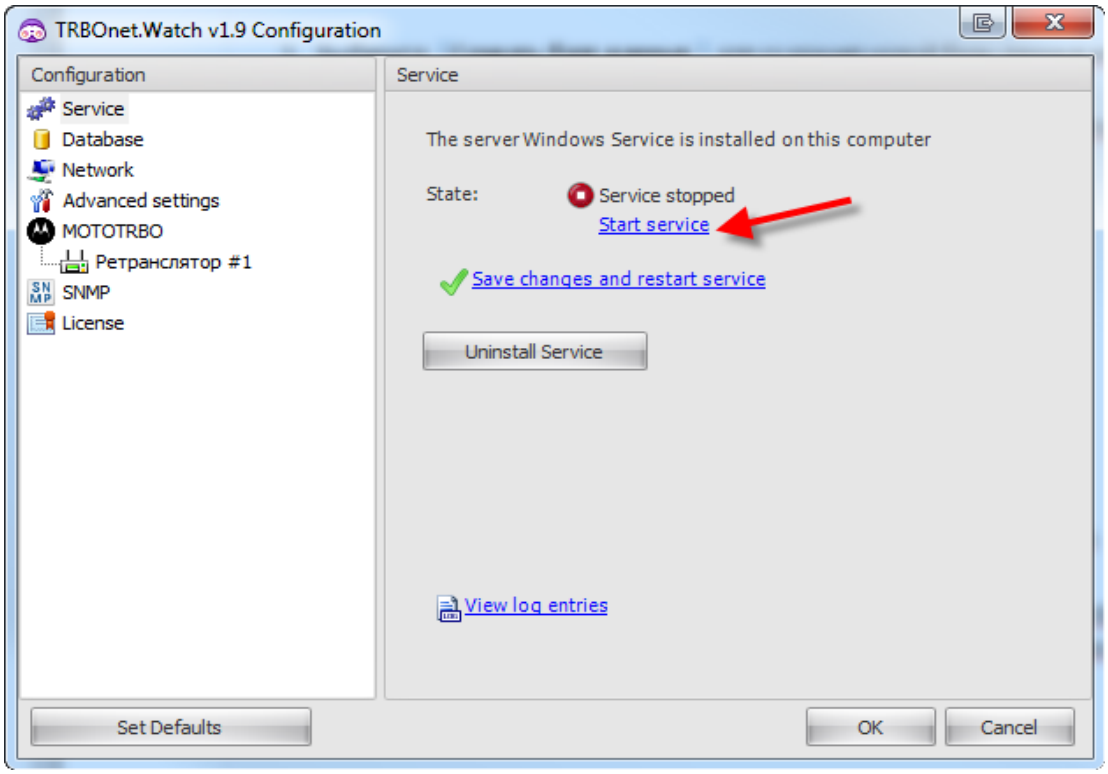
TO START OR STOP THE SERVICE

To start or stop the service click **Start service** or **Stop service**.

NOTE: After making any changes, please, click **Save changes and restart service** in order to restart the service and apply the changes.



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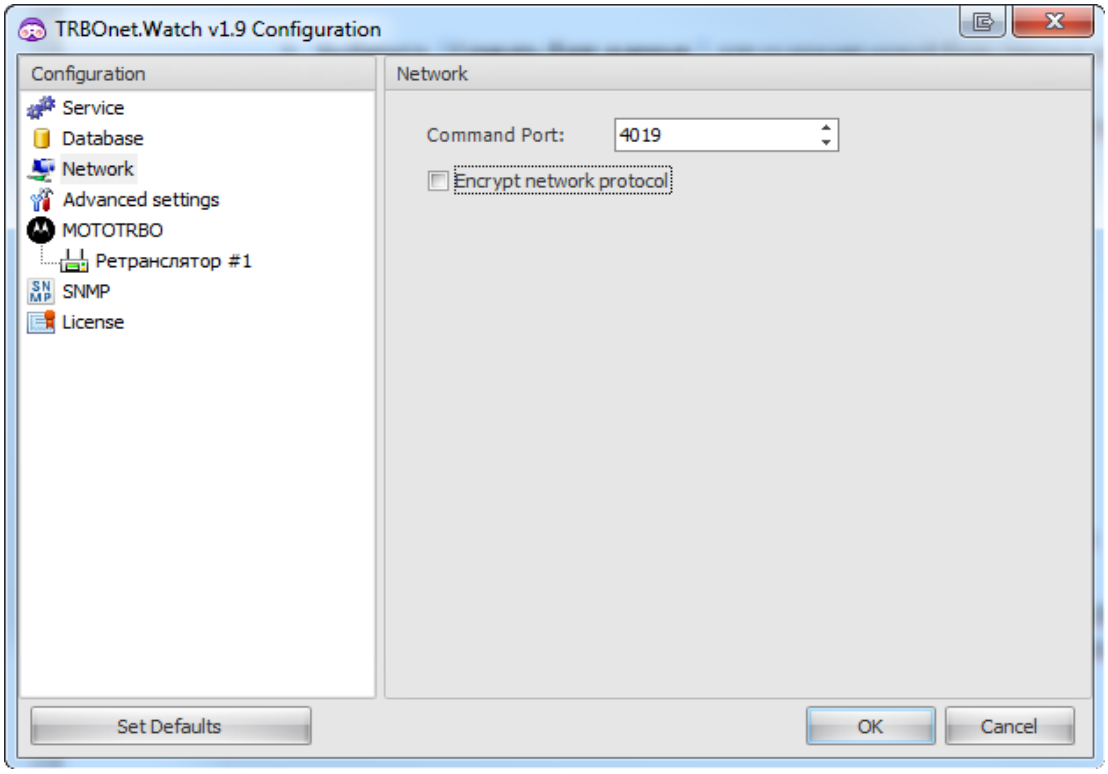
Network settings

To configure the network settings click **Network** in the Navigation Area.

Specify the following parameters:

- **Command Port** - Use the default value (4019)
- **Encrypt network protocol** - Select this checkbox to encrypt the data



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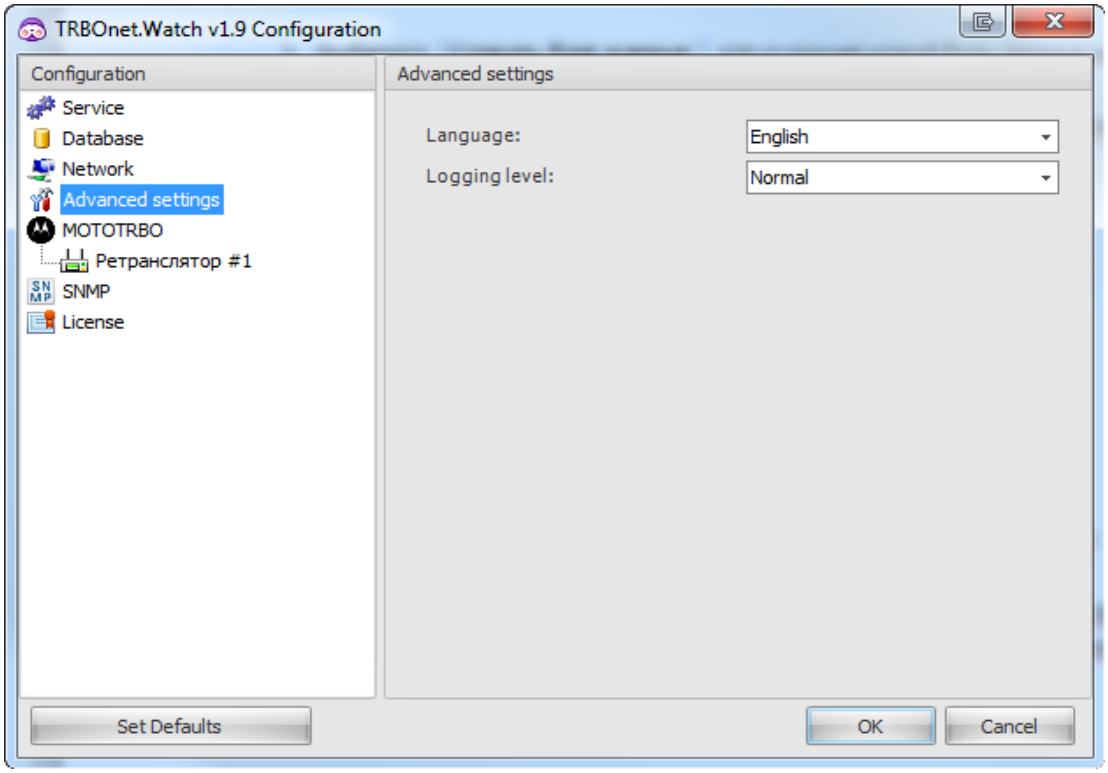
Advanced settings (language and logging level)

To configure the advanced settings click **Advanced settings** in the navigation tree.

Specify the following parameters:

- **Language** - Select the language
- **Logging level** - Determines the amount of data stored in the System Log. This information is used by technical support for troubleshooting, therefore it is recommended to select **Normal**.



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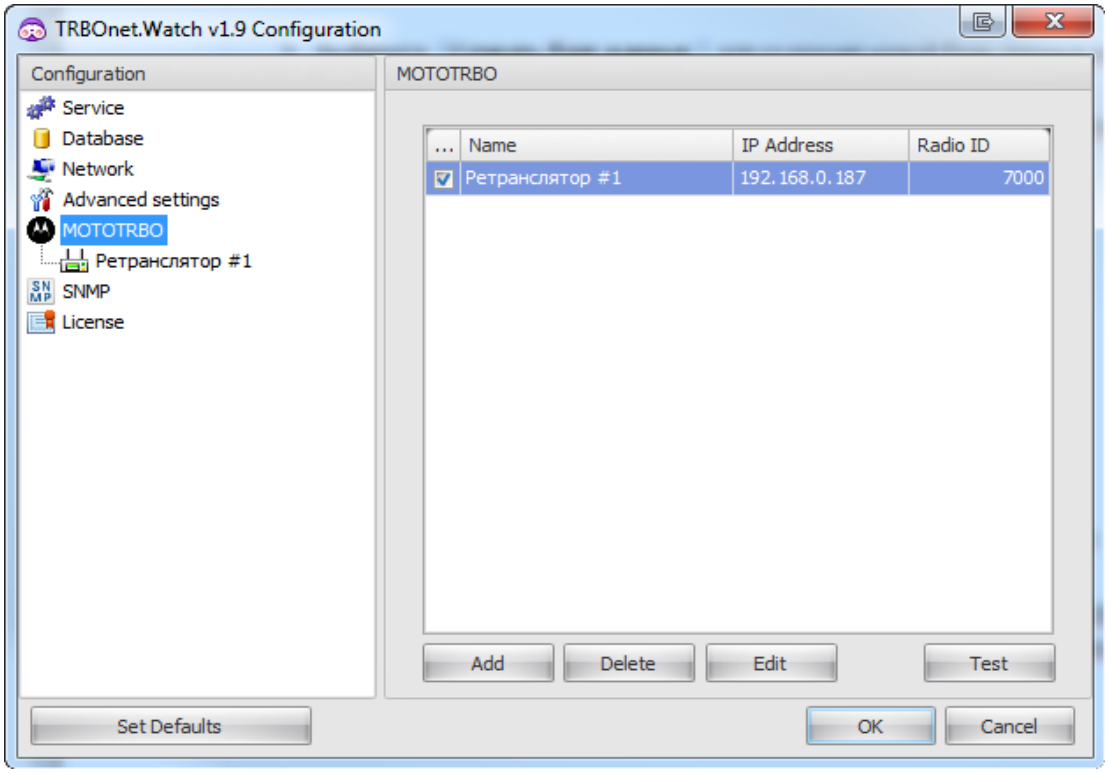
Adding repeaters

To add repeaters click **MOTOTRBO** in the Navigation Area.



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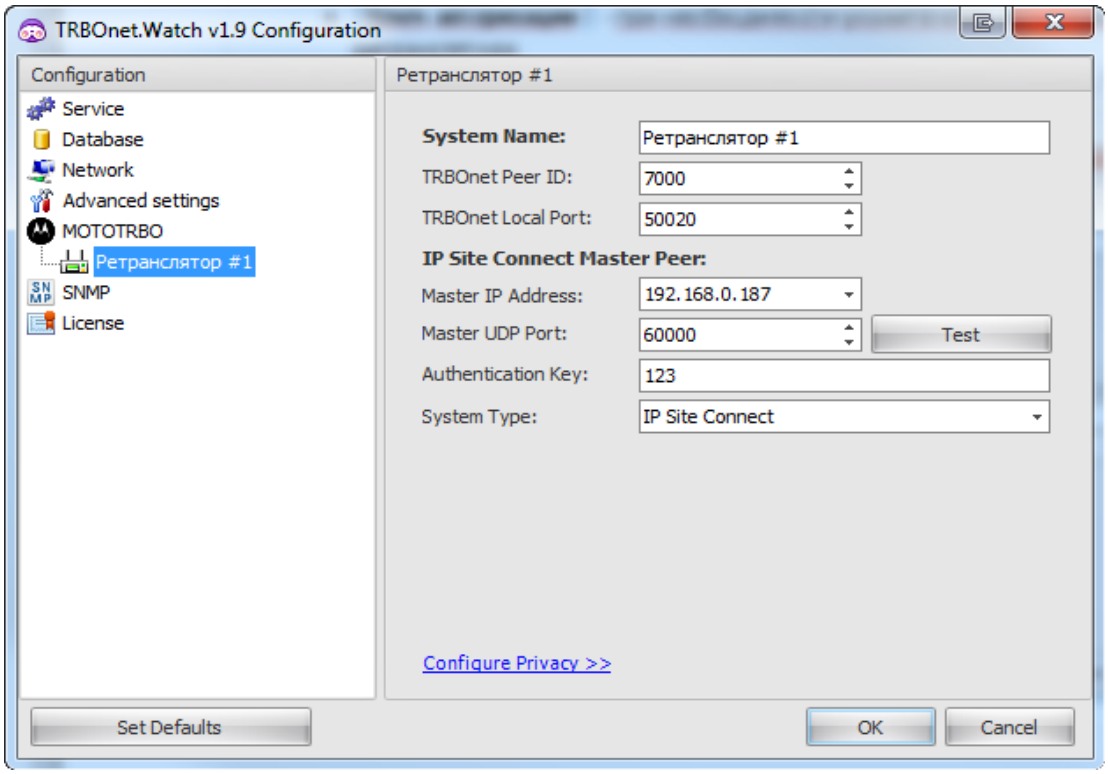
TO ADD A REPEATER

1. To add a repeater click **Add**.
2. Specify the following parameters:

- **System Name** - The displayed name of a system the repeater is master in
- **Watch Peer ID** - Repeater's unique ID

  NOTE: The ID should be unique for each connection to a repeater. For example, for connecting with TRBOnet Enterprise use 80000, for TRBOnet Watch - 80001 and for RDAC - 80002. Use different ID's for connecting to a repeater from different PC's.

- **Watch UDP Port** - Use a unique port for each repeater connection in case you add several repeaters to TRBOnet Watch.
- **Master IP Address** - Specify the repeater's IP address
- **Master UDP Port** - use the default (50000)
- **Test** - Click to test the connection to the repeater
- **Authentication key** - specify the repeater's authentication key if any
- **System Type** - specify the system type (**Capacity Plus** or **IP-Site**)



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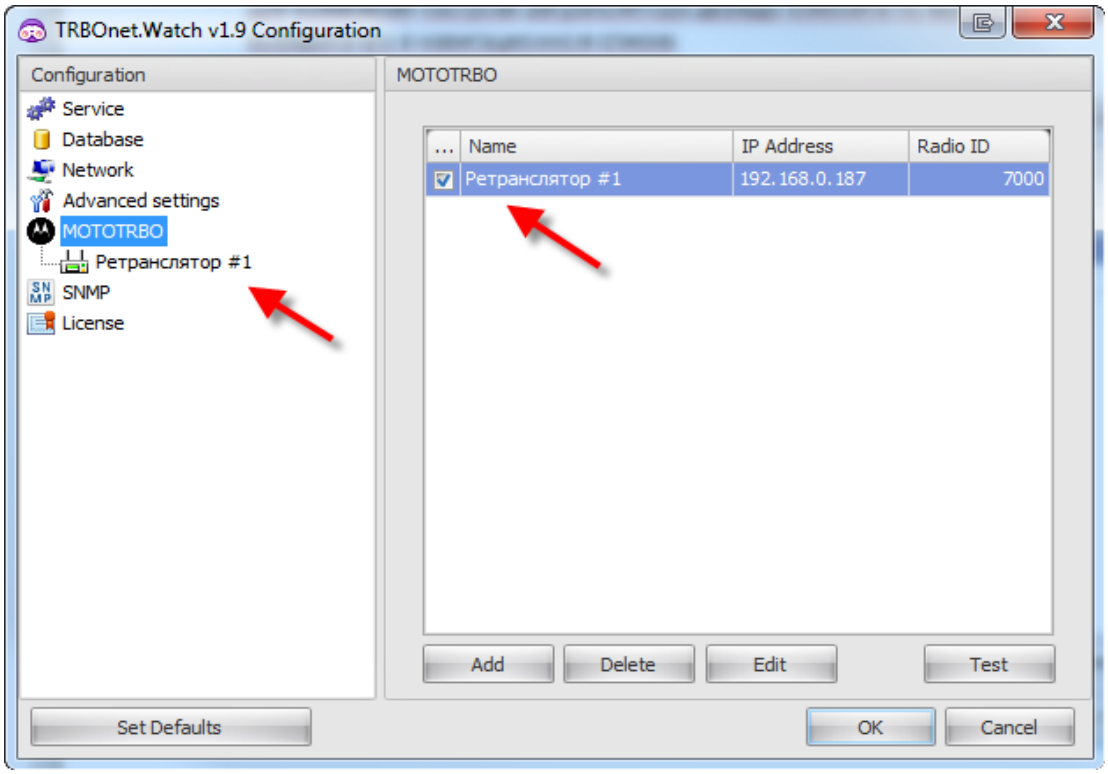
TO EDIT A REPEATER

To edit a repeater double-click the repeater on the list or select it in the Navigation Area.



TO DELETE A REPEATER

To delete a repeater select it on the list and click **Delete**.

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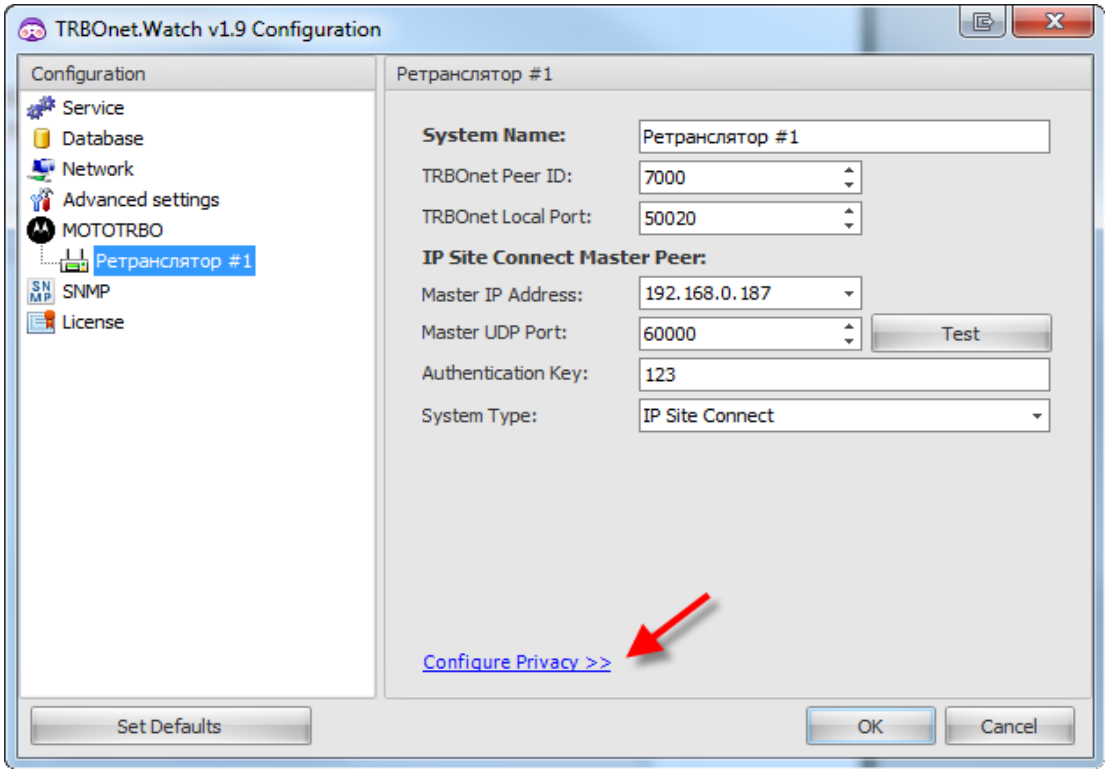
PRIVACY

To configure the Privacy click **Configure Privacy** under a repeater in the work area:



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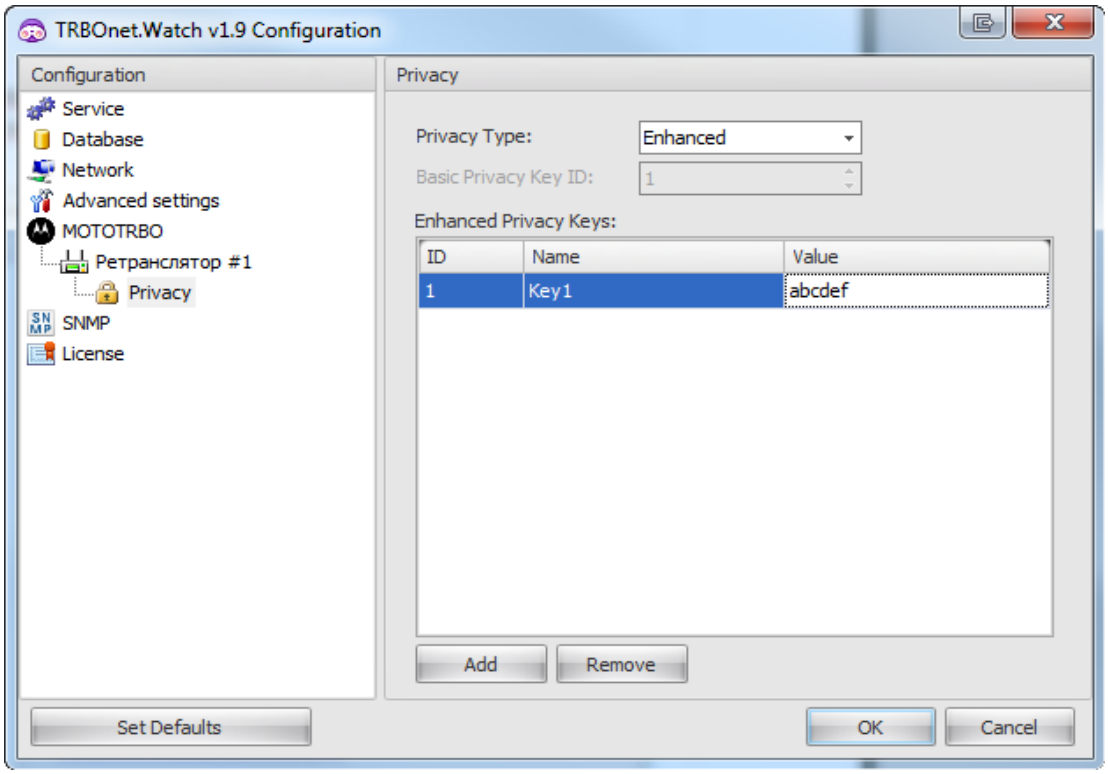
Configure the following parameters:



- **Privacy Type** - select **None**, **Basic** or **Enhanced**
- **Basic Privacy Key ID** - specify your Basic Privacy Key
- **Enhanced Privacy Keys** - Click **Add** to add a key and specify the name and value of the key.

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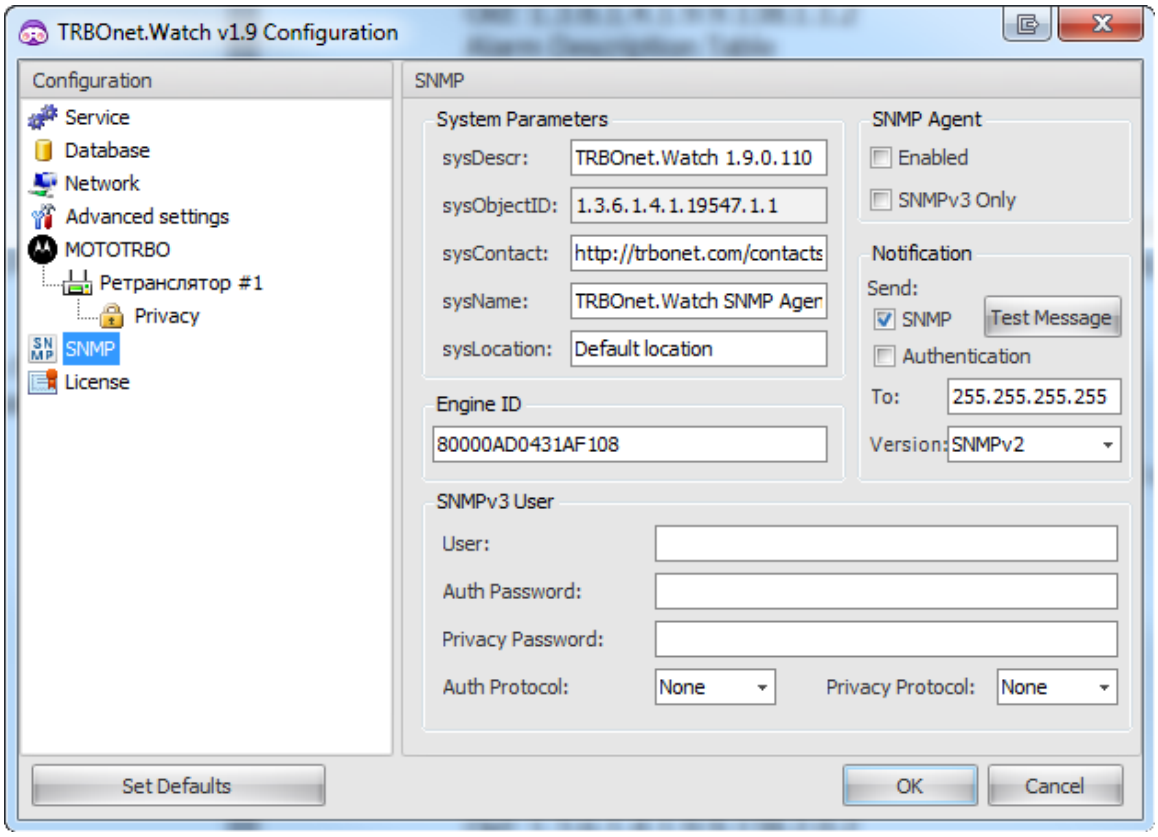
SNMP (Simple Network Management Protocol)

Simple Network Management Protocol is a standard internet protocol to manage the devices in IP Networks on the basis of UDP/TCP architecture. In the **TRBOnet Watch Server** it is used to monitor the repeater states. **SNMP** settings specified in the **TRBOnet Watch Server** are then used in **NMS** .



System Parameters:

sysDescr - brief server description for its further identification in the **NMS**

sysObjectID - personal ID of the server in the system (default)

sysContact - contact information with the Administrator of the system.

sysName - **TRBOnet Watch Server** name that will be shown in the **NMS**

sysLocation - data concerning server's location

Engine ID(only for **SNMPv3**) - ID used for encrypting of the data and its identification in the **NMS**.

SNMP Agent:

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Enabled - put the checkbox to activate **SNMP** mode

SNMPv.3 Only- put the checkbox to choose **SNMPv.3** (this version of the **SNMP** uses the data encryption when it is requested by the **NMS**)

Notification

Send:

SNMP - put the checkbox to dend the notifications to the **NMS**.

Test Message - press to test the sending of the system message about blocking of the access to the server's data in the **NMS**application.

Authentication - put the checkbox if you use **SNMPv3** version

To - specify the IP Address of the recipient

Version - select the protocol version: **SNMP**: **SNMPv2** or **SNMPv3**

SNMPv3 User (**Only for SNMPv3**)

User - specify the user name to enter the **NMS**

Auth password - specify the password to enter the **NMS**

Пароль конф - specify the extra password for privacy. The system will request this password first. After that you need to specify the **User** and **Auth password.**

Auth Protocol - choose the type of the authentication protocol

Privacy protocol - choose the type of the privacy protocol.

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TRBOnet Watch Server uses a certain set of the MIB files. These files should be loaded to the **NMS**:

- ns_00_INET-ADDRESS-MIB.mib
- ns_01_CISCO-SMI.mib
- ns_02_CISCO-TC.mib
- ns_03_RMON-MIB.mib
- ns_04_TOKEN-RING-RMON-MIB.mib
- ns_05_SNMP-FRAMEWORK-MIB.mib
- ns_06_RMON2-MIB.mib
- ns_07_ENTITY-MIB.mib
- ns_08_CISCO-ENTITY-ALARM-MIB.mib
- ns_09_ALARM-MIB[rfc3877].mib
- ns_10_NEOCOM-SMI.MIB
- ns_11_NEOCOM-PRODUCTS-MIB.MIB

Almost full compatibility with CISCO ENTITY-MIB and CISCO-ENTITY-ALARM-MIB is realized (08-09 files). These Mibs and all references(00-07 files) contained in the MIB\Common folder. NEOCOM-PRODUCTS-MIB describes TRBONet.Watch and determines the extent to which ENTITY-MIB and CISCO-ENTITY-ALARM-MIB are realized for version if the product. The numbers in the file names indicate the compilation order in Management Console (here and further examples will be used by CastleRock SNMPc NMS Computing http://www.castlerock.com/products/snmpc/default.php)

ENTITY-MIB Contains information for managing physical entities on the system. It also organizes the entities into a containment tree that depicts their hierarchy and relationship to each other. The MIB supports the following tables: –The entPhysicalTable describes each physical component (entity) in the system. The table contains an entry for the top-level entity (the master repeaters) and for each entity connected to master (hardware peers, applications, etc). Each entry provides information about that entity: its name, type, vendor, and a description, and describes how the entity fits into the hierarchy of system entities.

CISCO-ENTITY-ALARM-MIB provide the information concerning all the alarm types in the system:

- Monitor when alarms are asserted and cleared;
- Obtain alarm history information;
- Track alarm statistics and counts;
- Generate SNMP traps and syslog messages in response to alarms.

Main objects of interest for TRBOnet.Watch

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- entPhysicalTable
  Oid: 1.3.6.1.2.1.47.1.1.1
  The Physical Entity (Overall System Topology) Table
  Defined in module ENTITY-MIB

- ceAlarmDescrMapTable
  Oid: 1.3.6.1.4.1.9.9.138.1.1.1
  A mapping between an alarm description and a vendor type.
  Defined in module CISCO-ENTITY-ALARM-MIB

- ceAlarmDescrTable
  Oid: 1.3.6.1.4.1.9.9.138.1.1.2
  Alarm Description Table
  Defined in module CISCO-ENTITY-ALARM-MIB

- ceAlarmTable
  Oid: 1.3.6.1.4.1.9.9.138.1.2.5
  Alarm control and status information related to the corresponding physical
  entity, including a list of those alarms currently being asserted by that
  physical entity.
  Defined in module CISCO-ENTITY-ALARM-MIB

- ceAlarmHistTable
  Oid: 1.3.6.1.4.1.9.9.138.1.3.3
  This table contains a history of ceAlarmIndicate and ceAlarmClear traps generated by the agent.
  Defined in module CISCO-ENTITY-ALARM-MIB

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List of generated notifications:

- ceAlarmAsserted (Тревога установлена)
  Oid: 1.3.6.1.4.1.9.9.138.2.0.1
  Defined in module CISCO-ENTITY-ALARM-MIB

- ceAlarmCleared (Тревога снята)
  Oid: 1.3.6.1.4.1.9.9.138.2.0.2
  Defined in module CISCO-ENTITY-ALARM-MIB

- entConfigChange (генерируется при любом изменении таблицы entPhysicalTable)
  Oid: 1.3.6.1.2.1.47.2.0.1
  Defined in module ENTITY-MIB
- warmStart (standadrd notification when lauching the program)

Alarm overview

Each alarm contains the following information:

- **Alarm type** - unique code that identifies the alarm
- **Severity** - the seriousness of the condition causing the alarm
- **Description** - information about the condition that caused the alarm

Alarm States

An alarm's state indicates the current state of the condition that caused the alarm:

- **Asserted** - the condition currently exists.
- **Cleared** - the condition has been resolved.

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The severity of an alarm indicates the type of condition that the alarm represents:

- **critical(1)** - a severe, service-affecting condition requiring immediate corrective action;
- **major(2)** - a hardware or software condition that causes a serious disruption of service, or is on hardware essential to the operation of the system. Although less serious than a critical alarm, a major alarm requires immediate attention to correct the problem;
- **minor(3)** - a condition or problem that does not affect service, or is on nonessential hardware;
- **info(4)** - the information message concerning the event that improves operation, or the indication of a condition that could cause a problem.

Interpreting Alarm Information in the CISCO-ENTITY-ALARM-MIB

To obtain information about system alarms from the CISCO-ENTITY-ALARM-MIB, do the following:

Step 1: to determine if any alarms are currently being asserted, read the values of the objects in ceAlarmTable. Each entry in the table contains information about the alarms currently being asserted by each physical entity. Each entry is indexed by the entPhysicalIndex (ENTITY-MIB) of the entity;

Step 2: to obtain information about individual alarms, read the values of the ceAlarmDescrSeverity and ceAlarmDescrText objects.

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TRBOnet.Watch alarm hex-codes:

RxAlarm = 0x02,
Receiver_EEPROM_Corruption_Type_1 = 0x0C,
Receiver_EEPROM_Corruption_Type_2 = 0x0D,
Receiver_EEPROM_Corruption_Type_3 = 0x0E,
RxRevision = 0x28,
TxAlarm = 0x01,
FanAlarm = 0x05,
PA_EEPROM_Corruption_Type_1 = 0x06,
PA_EEPROM_Corruption_Type_2 = 0x07,
PA_EEPROM_Corruption_Type_3 = 0x08,
PA_Revision = 0x26,
Exciter_EEPROM_Corruption_Type_1 = 0x09,
Exciter_EEPROM_Corruption_Type_2 = 0x0A,
Exciter_EEPROM_Corruption_Type_3 = 0x0B,
Exciter_Revision = 0x27,
Transmitter_Power_Minor_Alarm_2db = 0x15,
Transmitter_Power_Minor_Alarm_3db = 0x16,
Transmitter_Power_Major_Alarm_3db = 0x17,
PA_Gain_Alarm = 0x24,
Exciter_Final_Amp_Alarm = 0x20,
Exciter_Driver_Amp_Alarm = 0x1F,
RF_Power_Control_Alarm = 0x23,
Reference_Incompatibility = 0x1E,
Interoperability_Between_Exciter_and_PA = 0x18,
AC_Power_Alarm = 0x04,
PA_Voltage_Minor_Alarm = 0x11,
PA_Voltage_Major_Alarm = 0x12,
PA_Voltage_Alarm_High = 0x10,
Volt_8_Supply_Alarm = 0x21,
Volt_10_Supply_Alarm = 0x22,
Incorrect_Carrier_Frequency = 0x19,
Incorrect_Codeplug_for_MTR2000_PA = 0x1A,
Temp_Alarm = 0x03,
VSWR_Minor_Alarm = 0x13,
VSWR_Major_Alarm = 0x14,
Ext_Circulator_Temp = 0x25,
PeerDisconnected = 0x107

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Examples of the activation of the SNMP mode using CastleRock SNMPc NMS (http://www.castlerock.com/products/snmpc/default.php).

1. Installing custom MIBs in the SNMPc Management Console.

- copy to the ...\SNMPc Network Manager\mibfiles\ folder all files from MIB folder (files should have the .mib extension);
- start the console and in the main menu choose Config->Mib Database...;
- in the dialog window click **Add** and choose necessary files from the list and press **OK**;
- recompile console MIB database by pressing **Compile**.

2. Adding TRBOnet.Watch in the list of console monitoring entities

- choose **Insert**->**Map Objects**->**Device**... in the main menu;
- in the dialog window specify IP-Address and Name for TRBOnet.Watch and press **OK**.

3. Configuring SNMPv3 Protocol with the authentication and confidentiality

- in Root Subnet choose Watch object, click on it with the right mouse button and select **Properties**. In the dialog window Access tab fill in the following fields:
- **Read Access Mode**: SNMP V3 Priv-DES Auth-MD5
- **Read/Write Access Mode**: SNMP V3 Priv-DES Auth-MD5
- **V3 Engineid**: введите значение, указанное в конфигурации приложения TRBOnet Watch (значение по умолчанию 80000AD0431AF108)
- **V3 Auth/Prive Security Name, V3 Auth Passwd, V3 Priv Passwd** - set the SNMPv3 user settings that are selected in the **TRBOnet Watch Server** configuration and click **OK**.

4. How to read a list of alarms from a ceAlarmList (ceAlarmTable, Oid: 1.3.6.1.4.1.9.9.138.1.2.5.1.3)

This line consists of 32 bytes in hexadecimal format. Type of alarm is encoded by ordinal bit.

The encoding line may look like this:

00 00 00 00 00 00 00 00 00 00 00 00 00 08 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

I.e. 13 * 8 + 3(00001000) = 107 (PeerDisconnected Alarm).

Other types of alarms are defined similarly. If no alarms are set, the line will have zero length.

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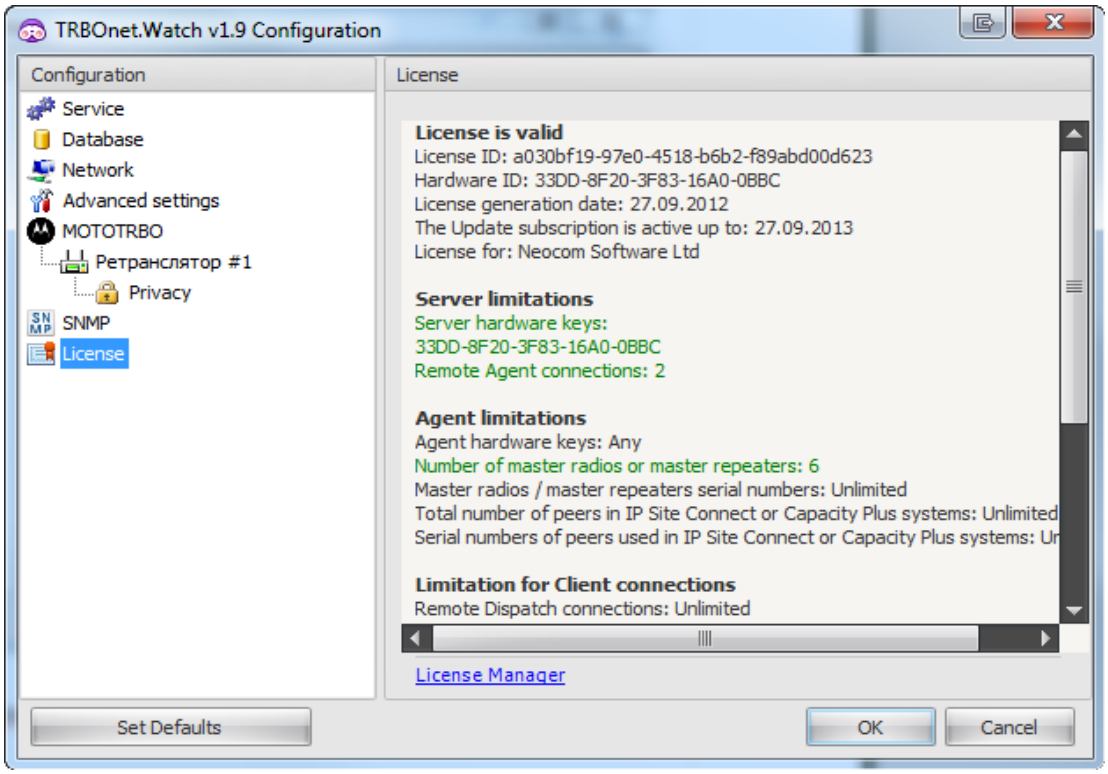
License Information

To view the license information select License in the Navigation Area.



To update your license click **License Manager** and follow the prompts.

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TRBONET WATCH CONSOLE

TRBOnet Watch Console allows monitoring and analyzing the data traffic of IP Site Connect repeaters.

The Console includes the following interfaces:

1. Monitoring
2. Reports
3. Analytics
4. Voice Recording
5. Administration

LAUNCHING TRBOnet Watch Console

To Launch TRBOnet Watch Console:

1. Do one of the following:

- Double-click the **TRBOnet Watch** shortcut on the desktop.
- From the **Start** menu, select **All Programs | Neocom Software | TRBOnet Watch | TRBOnet Watch Console**.

2. Select the interface language.
3. Configure connection parameters to the server, then click **OK**.

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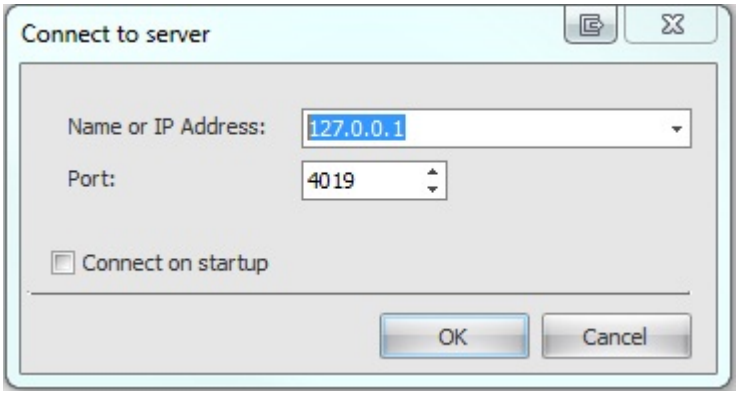
Configuring Connection to the TRBOnet Watch Server

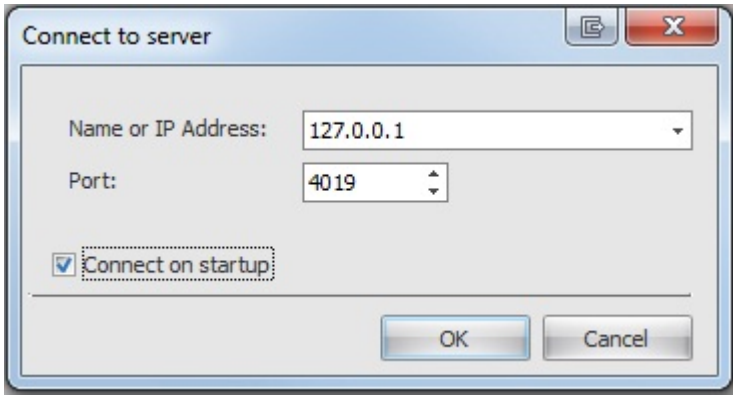
TO CONFIGURE CONNECTION TO THE TRBONET WATCH SERVER

1. Run the TRBOnet Watch Console. The connection dialog displays.
2. Enter bonding parameters to the TRBOnet Watch Server you want to connect:

- **Server** – an IP address or DNS name of the computer where the TRBOnet Watch Server resides.
- **Port** – a port where the TRBOnet Watch Server resides (default 4019).



3. The connection dialog displays every time you launch TRBOnet Watch console. To save the connection settings and display the TRBOnet Watch Console main window immediately after you launch the application, select **Connect on startup**. Later, you can view the connection dialog and modify bonding settings from the menu.



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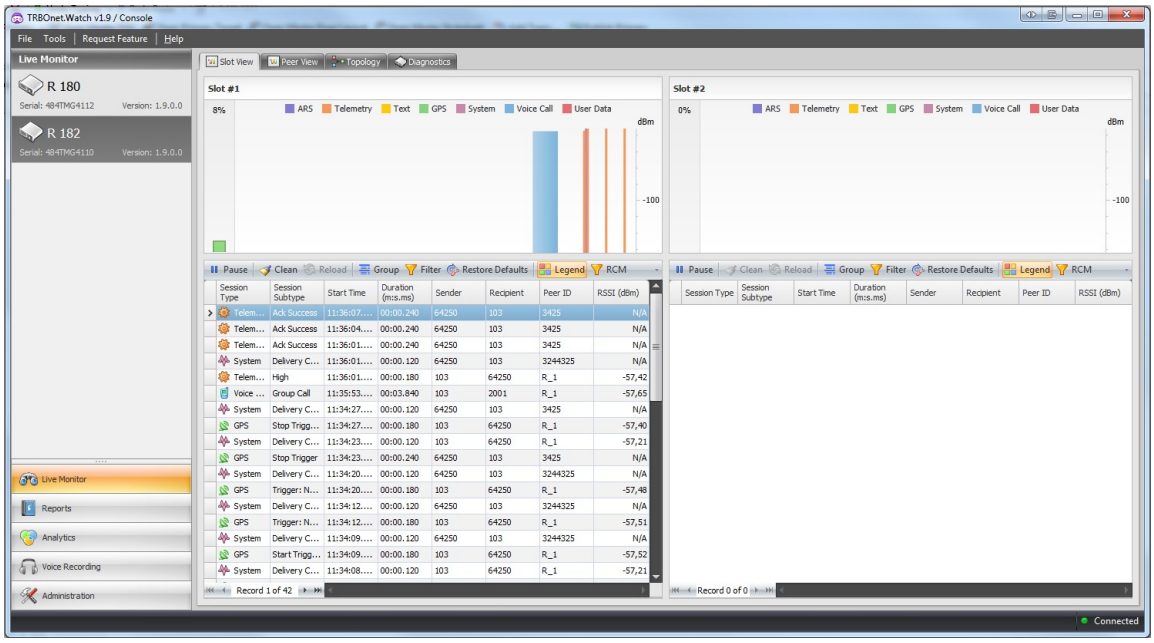
4. After entering the parameters, click **OK**. If the bonding parameters are correct, the main TRBOnet Watch Console window is displayed.



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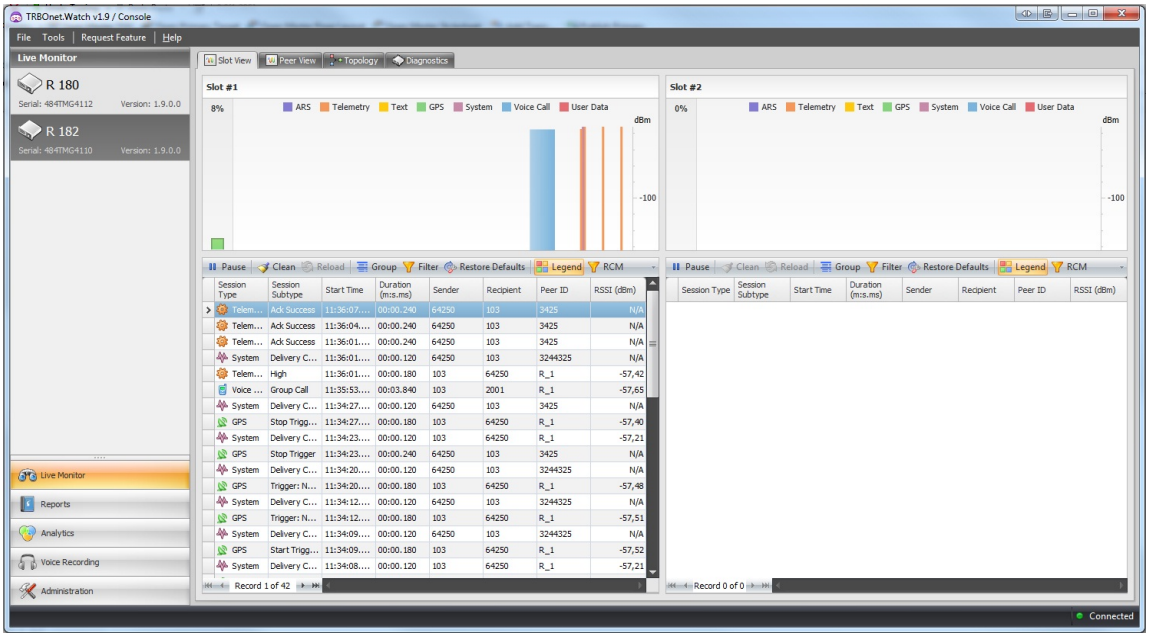
1. Live Monitor interface

The **Live Monitor** tool provides online monitoring, analyzing and filtering of all voice and data traffic on IP Site Connect and Capacity Plus systems.

To view the system select it in the Navigation Area.



The **Live Monitor** mode shows the activity of the radio stations and repeaters in real time.

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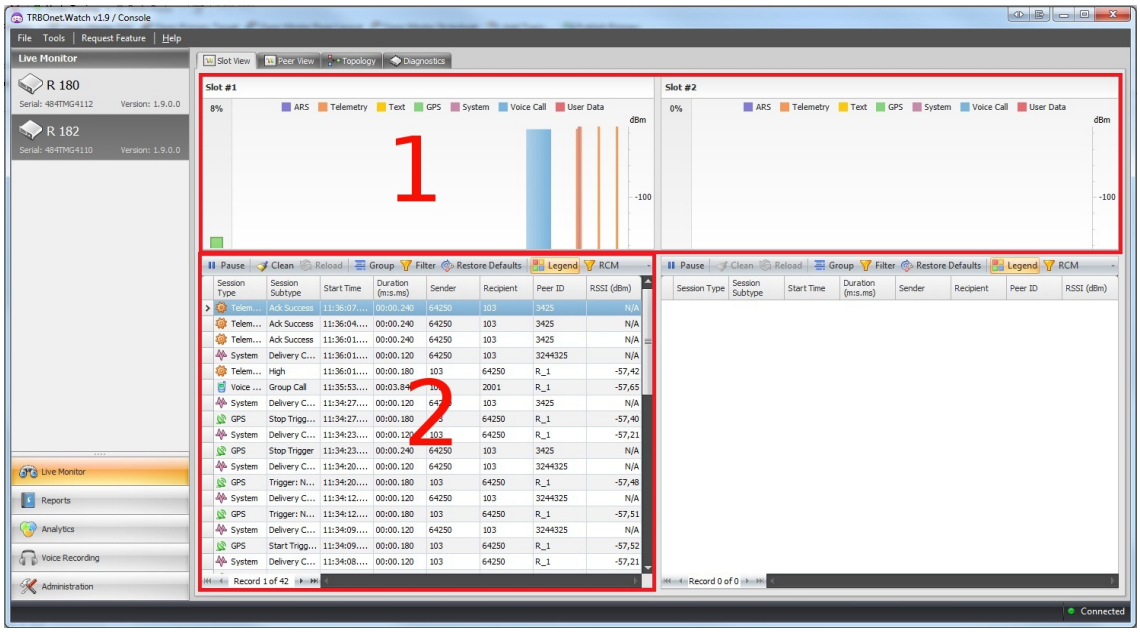
Slot View

Slot View is available for IP Site systems only. It sorts the information from all peers into two slots. The data is presented on the diagram and in the table.



1. Diagram

It is impossible to see on the diagram what peer sends the information. The diagram shows the activity of all radios of the slot for the last minute. The data packages (Voice, GPS, ARS, etc.) received by the Server are marked with different colors due to their type. There are the workload scale on the left of the diagram and RSSI level scale (in dBm) on the right.

2. Table

The table shows the data from all the slots of the selected system.

You can see in the table the following data:

Session Type

Session Subtype

Start Time

Duration

Sender

Recipient

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Peer ID

RSSI (dBm)

There is a **Toolbar** in the table to analyze the data.

Pause. Click **Pause** on the Toolbar to pause the monitoring. Click **Run** to start the monitoring.

Clean. Click **Clean** on the Toolbar to clean the Event Log.

Reload. Click **Reload** on the Toolbar to restore the Event Log.

Group. Click **Group** on the Toolbar and drag a column header to the appearing line to group the data by this column or right click on a column header and choose **Group By This Column**in a Context Menu. To change grouping criterion drag another column header to the line and drag the previous one back. You can also set few criteria for grouping. To exit the Group mode click **Group** on the Toolbar or right click on a column header and choose **UnGroup**.

Filter. Click **Filter** on the Toolbar to filter the data by a column. Type the data - criterion of filtering under the column header. To exit the filter mode click **Filter** on the Toolbar.

Restore Defaults. Click **Restore Defaults** to restore default settings. To exit this mode click **Restore Defaults** on the Toolbar.

Legend. Click **Legend** on the toolbar to show or hide the legend (color icons of the diagram).

RCM (**Repeater Calls Monitor**). Click **RCM** to view the messages sent by repeater via RCM protocol. These messages appear in the Event Log as **System Messages** to show the current state of the repeater. To exit RCM mode click **RCM** on the Toolbar. To learn more about **RCM** see **Diagnostics**

1. CALL TRANSMISSION STATUS:

Race Condition Failure	Simultaneous being on the air with another subscriber
Invalid/Prohibited Call Failure	Incorrect or forbidden format
Destination Slot Busy Failure	Recieving slot is occupied
Subscriber Destination Busy Failure	Subscriber is not available
All Channels Busy Failure	All channels are busy
Other Unknown Call Failure	Broadcast of the calls into the the air is intermitted
Signal Interference Failure	Interference in the radio network
CWID in Progress Failure	Repeater is broadcasting CWID beacon
TOT Expiry Premature Call End Failure	The timer of transmitting duration limit has gone off
Transmit Interrupted Call Failure	Forced interruption
Higher Priority Call Takeover Failure	The call is over necause of higher priority call
Other Unknown Call Failure	The reason is unknown

2. RCM REPEAT BLOCKED INDICATION:

Start of Signal Interference (FCC Type I)	Signal interference is strong enough and begins blocking repeat (FCC Тип I)

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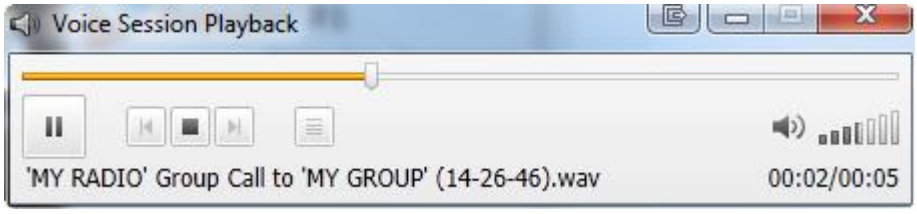
End of Signal Interference (FCC Type I)	Signal interference is weak enough and repeater resumes over the air repeat (FCC Тип I)
Start of Signal Interference (FCC Type II)	Signal interference is strong enough and begins blocking repeat (FCC Тип II)
End of Signal Interference (FCC Type II)	Signal interference is weak enough and repeater resumes over the air repeat (FCC Тип II)
Start of CWID/BSI Repeat	The repeater has to transmit CWID/BSI and begins blocking repeat
End of CWID/BSI Repeat	The repeater finishes CWID/BSI transmission and resumes over-the-air-repeat

Play. Click **Play** on the Toolbar to play Voice Call (available for Voice Calls only). The following Player window appears:



Export Voice Calls To Folder. Click **Export Voice Calls To Folder** to export the Voice Calls. Choose the Folder to export the Voice Calls.

Dimensions of the diagram/table.

You may select dimensions of the diagram/table. Click the cursor on the board of the diagram/table and move it to set appropriate dimensions.

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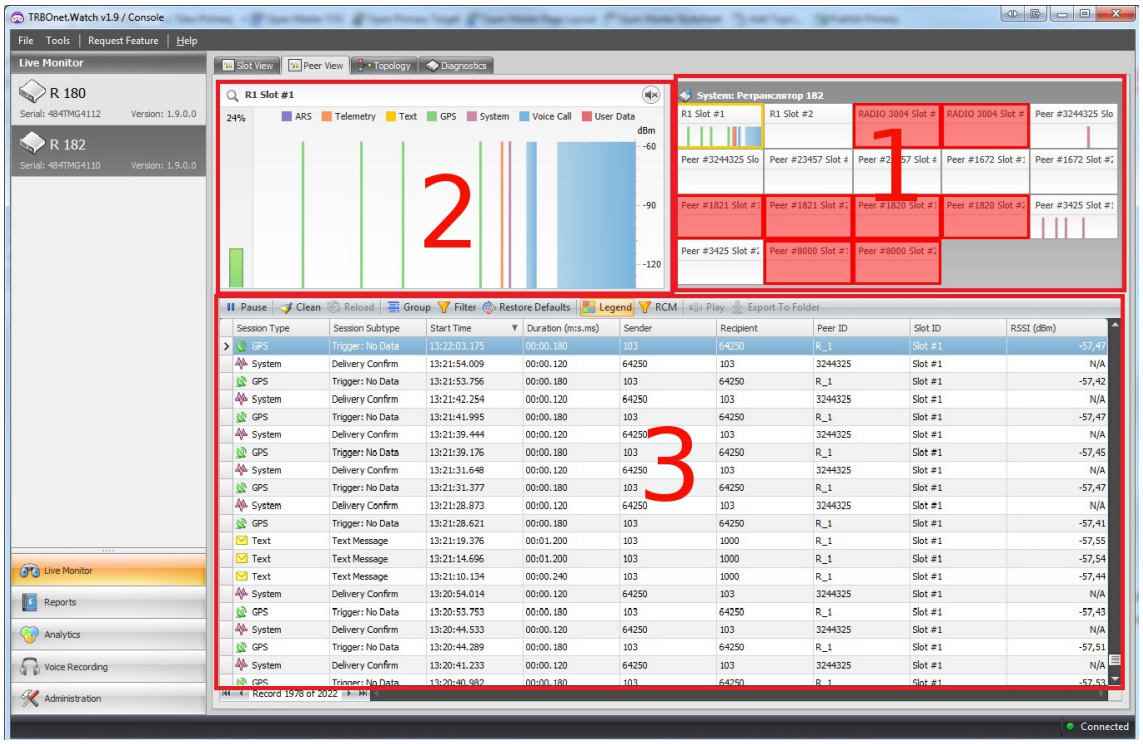
Peer View

Peer View is available both for Capacity Plus systems and for IP Sites ones. It shows all the slots in the selected system. To select the system click on the system in the Navigation Area.



1. The list of slots shows all peers and slots. Click to slot to view its data on the diagram. If the peer loses connection with the server its slots turn red.

2. The diagram shows the activity of the radio stations in real time. The data packages (Voice, GPS, ARS, etc.) received by the Server are marked with different colors due to their type. There are the workload scale on the left of the diagram and RSSI level scale (in dBm) on the right. You may listen to Voice Calls of the selected slot in real time mode. Select the slot in the list of slots. Click on the right of the diagram. **Note!** If you select another slot in the list of slots, this function will be turned off automatically.

3. The table shows data of all the slots of selected system.

You can see in the table the following data:

Session Type

Session Subtype

Start Time

Duration

Sender

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Recipient

Peer ID

RSSI (dBm)

There is a **Toolbar** in the table to analyze the data.

Pause. Click **Pause** on the Toolbar to pause the monitoring. Click **Run** to start the monitoring.

Clean. Click **Clean** on the Toolbar to clean the Event Log.

Reload. Click **Reload** on the Toolbar to restore the Event Log.

Group. Click **Group** on the Toolbar and drag a column header to the appearing line to group the data by this column or right click on a column header and choose **Group By This Column**in a Context Menu. To change grouping criterion drag another column header to the line and drag the previous one back. You can also set few criteria for grouping. To exit the Group mode click **Group** on the Toolbar or right click on a column header and choose **UnGroup**.

Filter. Click **Filter** on the Toolbar to filter the data by a column. Type the data - criterion of filtering under the column header. To exit the filter mode click **Filter** on the Toolbar.

Restore Defaults. Click **Restore Defaults** to restore default settings. To exit this mode click **Restore Defaults** on the Toolbar.

Legend. Click **Legend** on the Toolbar to show or hide the legend (color icons of the diagram).

RCM (**Repeater Calls Monitor**). Click **RCM** to view the messages sent by repeater via RCM protocol. These messages appear in the Event Log as **System Messages** to show the current state of the repeater. To exit RCM mode click **RCM** on the Toolbar. To learn more about **RCM** see **Diagnostics**

1. CALL TRANSMISSION STATUS:

Race Condition Failure	Simultaneous being on the air with another subscriber
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CWID in Progress Failure	Repeater is broadcasting CWID beacon
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Transmit Interrupted Call Failure	Forced interruption
Higher Priority Call Takeover Failure	The call is over necause of higher priority call
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2. RCM REPEAT BLOCKED INDICATION:

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Start of Signal Interference (FCC Type I)	Signal interference is strong enough and begins blocking repeat (FCC Тип I)
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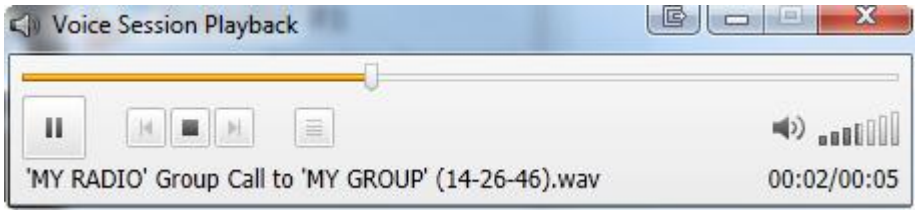
Start of Signal Interference (FCC Type II)	Signal interference is strong enough and begins blocking repeat (FCC Тип II)
End of Signal Interference (FCC Type II)	Signal interference is weak enough and repeater resumes over the air repeat (FCC Тип II)
Start of CWID/BSI Repeat	The repeater has to transmit CWID/BSI and begins blocking repeat
End of CWID/BSI Repeat	The repeater finishes CWID/BSI transmission and resumes over-the-air-repeat

Click **Play** on the Toolbar to play Voice Call (available for Voice Calls only). The following Player window appears:



Export Voice Calls To Folder. Click **Export Voice Calls To Folder** to export the Voice Calls. Choose the Folder to export the Voice Calls.

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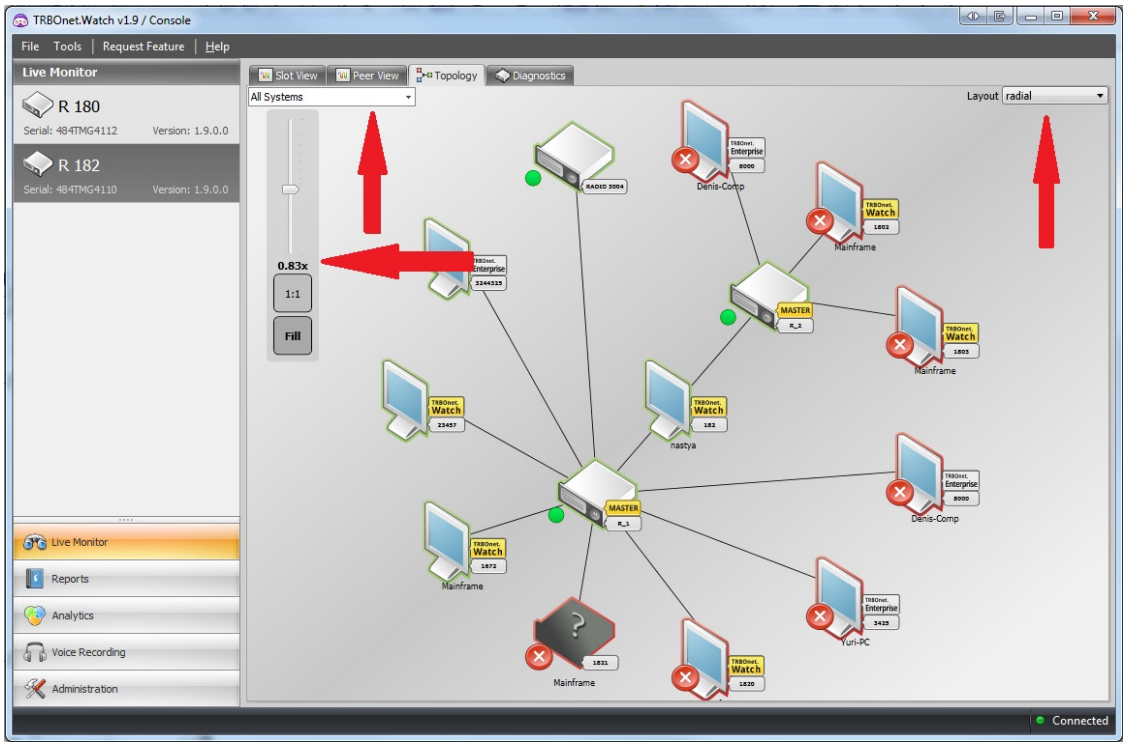
Topology

The **Topology** mode allows viewing the selected system's topology (The master and the peers and their ID's and computer connections to the master). The system remembers all the peers ever connected to the master. Right-click the peer and select **Remove The Peer From The Map** to delete selected peer. Right-click any peer and select **Remove All Disconnected Peers** to delete all disconnected peers.



Select **All Systems** in the dropdown list to view the topology of all systems. Go to **Selected System**in the dropdown list to view its Topology. Select the system in the Navigation Area to view its topology.

Select the view of the Topology in the List of **Layouts**.

Following modes are available:

Circle

By layers

By groups

Radial

Type 1

Type 2

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Select the zoom of the Topology. You may change it by the scroll wheel of the mouse or choose it on the zoom scale.

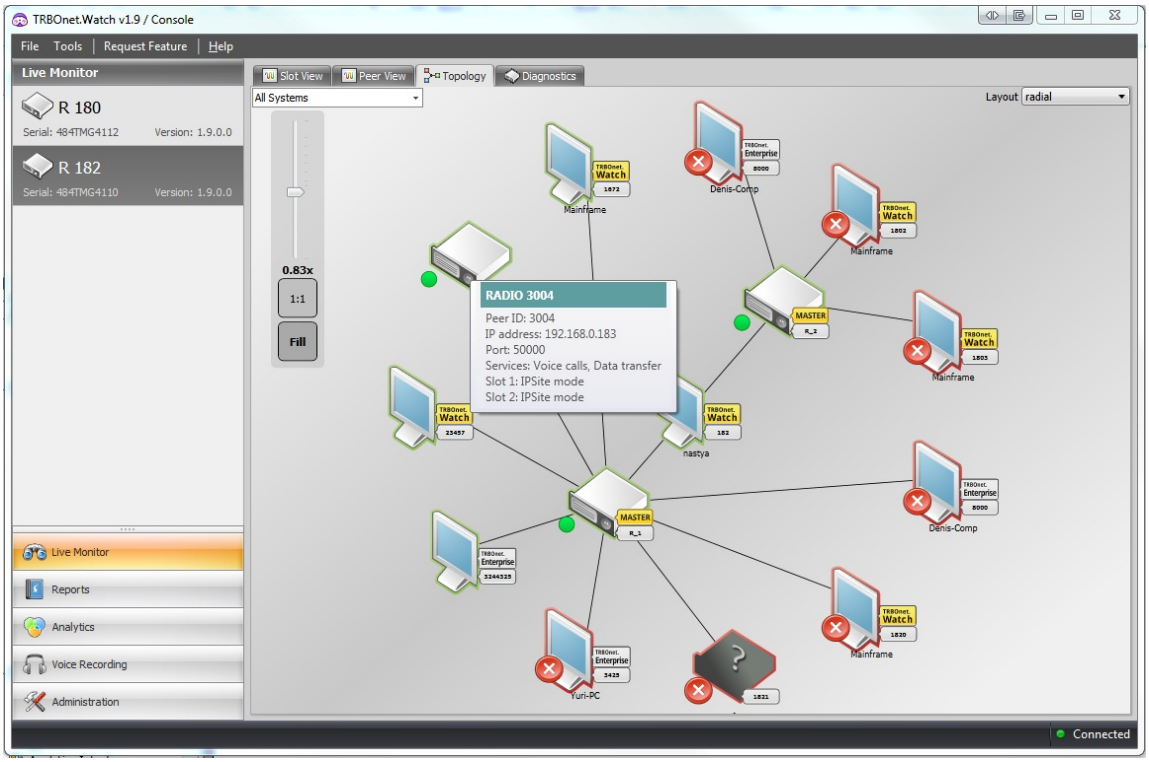
Select

to view the Topology in natural size.

Select

to view current Topology in the much of the screen.

Put the mouse cursor to the peer to view the peer's context menu.



The context menu has following data:

Name of the Peer

Peer ID

IP address

Port Number

Services

Slot 1

Slot 2

Every peer has icons with Peer ID and Type of the system.

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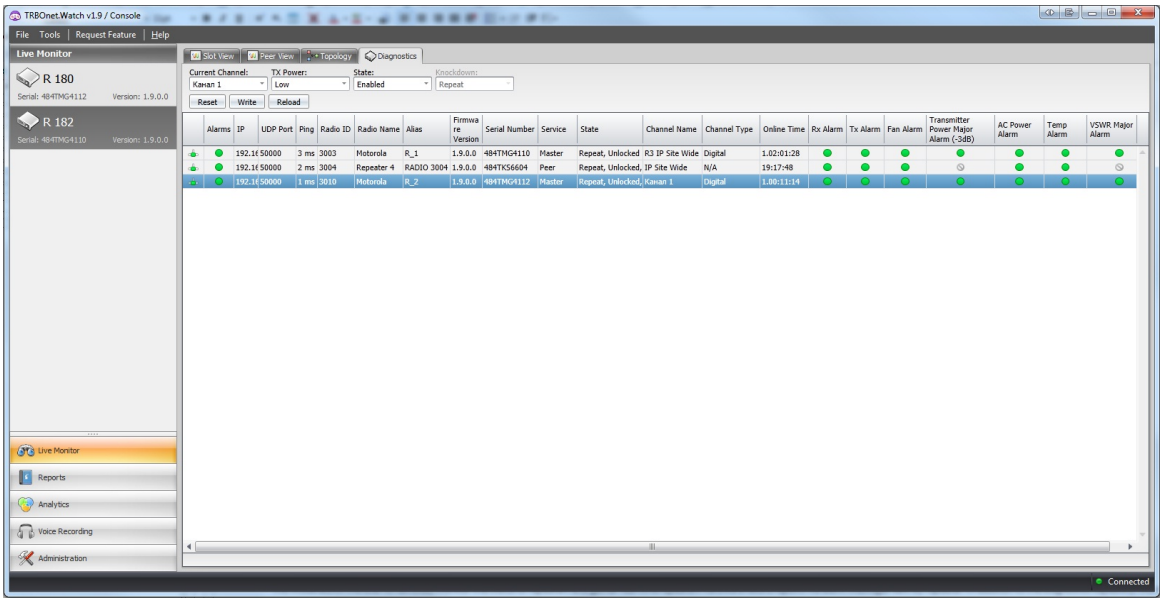
Diagnostics

This mode allows the user to remotely monitor the status of repeaters and gather real-time repeaters hardware failure reports via alarm messages sent by repeater. In addition to the diagnostics capability, this mode also allows the user to control some of the parameters of the repeater.



The Table. There are all characters of peers and repeaters in the table.

The Table shows following data:

The device is connected

The device function normally. If the device has failures this icon will change to another.

IP

UDP Port

Ping

Radio ID

Radio name

Alias

Firmware version

Serial Number

Service

State

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Channel Name
Channel Type
Online Time
RX Alarm
TX Alarm
Fan Alarm
Transmitter Power Minor Alarm (-2dB)
Transmitter Power Minor Alarm (-3dB)
Transmitter Power Major Alarm (-3dB)
PA Gain alarm
Exciter Final Amp alarm
Exciter Driver Amp Alarm
RF Power Control Alarm
AC Power Alarm
PA Voltage Minor Alarm
PA Voltage Major Alarm
PA Voltage Alarm (High)
8 Volt Supply Alarm
10 Volt Supply Alarm
Temp Alarm
Rx Revision
Reference Incompatibility
Reciever EEPROM Corruption Type 3
Reciever EEPROM Corruption Type 2
Reciever EEPROM Corruption Type 1
VSWR Minor Alarm
VSWR Major Alarm
PA Revision
Exciter EEPROM Corruption Type 1
Exciter EEPROM Corruption Type 2
Exciter EEPROM Corruption Type 3
PA EEPROM Corruption Type 1
PA EEPROM Corruption Type 2
PA EEPROM Corruption Type 3
Exciter Revision
Incorrect Carrier Frequency
Incorrect Codeplug for MTR2000 PA

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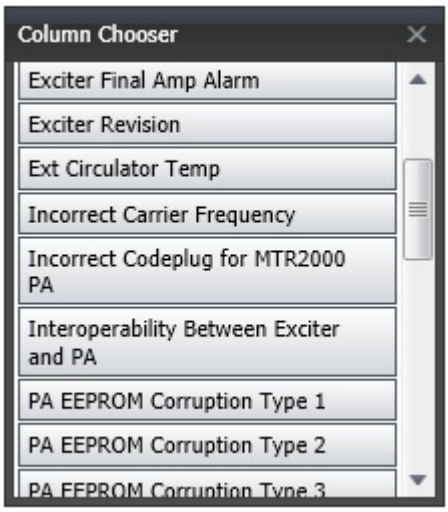
Interoperability Between Exciter and PA

Ext Circulator Temp

To bond some types of messages in the table click any column header and select **Show Column Chooser**. The list of columns will appears.



Select the column. Put the mouse cursor on the selected column and drag it to the line of headers in the table.

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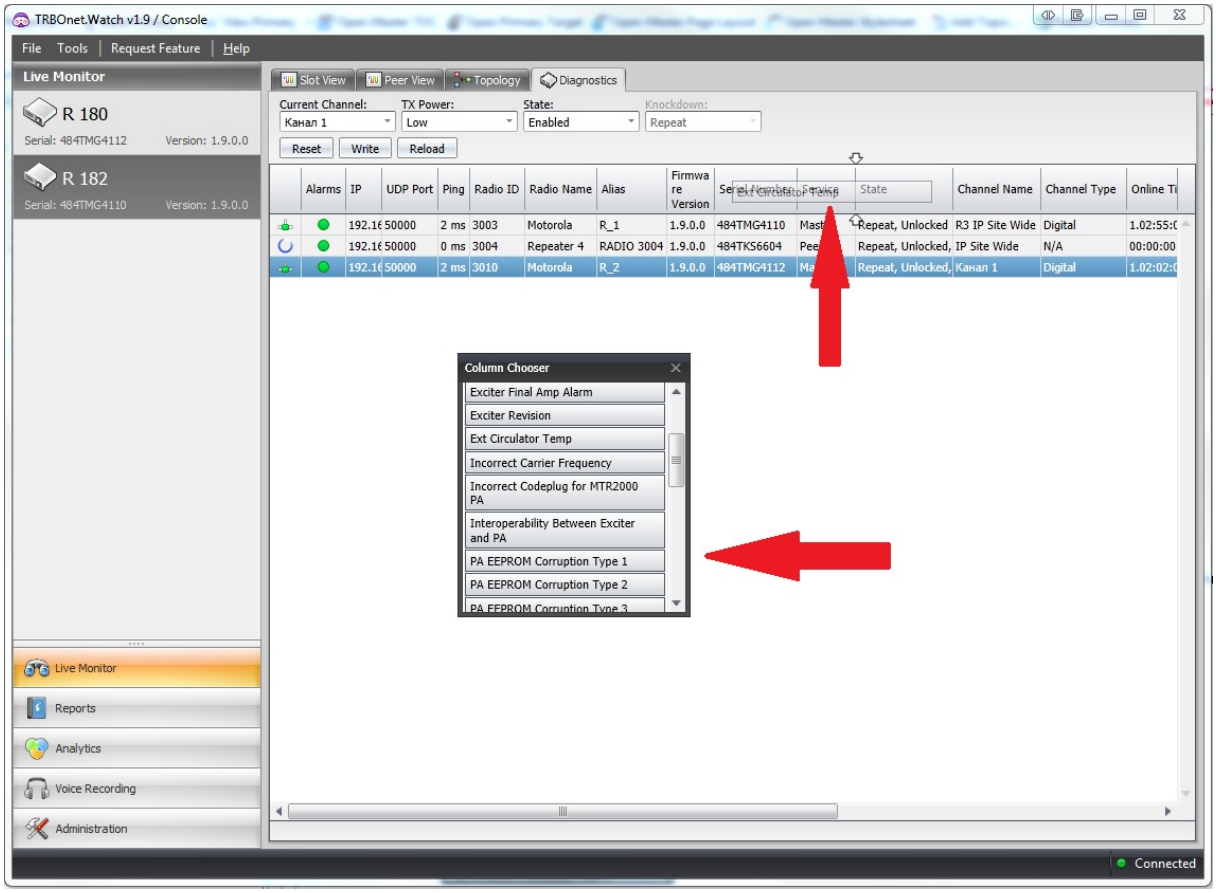

There is the Toolbar to analyze the data.

Current Channel - it shows the current channel of the repeater and allows to switch to another preprogrammed one.

TX Power - select the transmission power: **High** - it is used when a stronger signal is needed to extend transmission distances, **Low** - it is used at the time of communicating in close proximity, and to prevent transmissions into other geographical groups

State - select the state of the repeater **Enabled** when it is capable to transmit, receive and repeat operations or **Disabled** when it is not able to transmit, receive or repeat, but it still responds to GPIO controls, such as channel steering and to alarms and diagnostics

Knockdown - (used only for analog stations) select **Repeat** for normal repeating functionality or **Knockdown** for only receiving and transmitting (but not repeating) on wire line audio.

Reset - to update the parameters of selected object in the table.

Write - to select and save the settings for repeater.

Reload - to reload selected object in the table.

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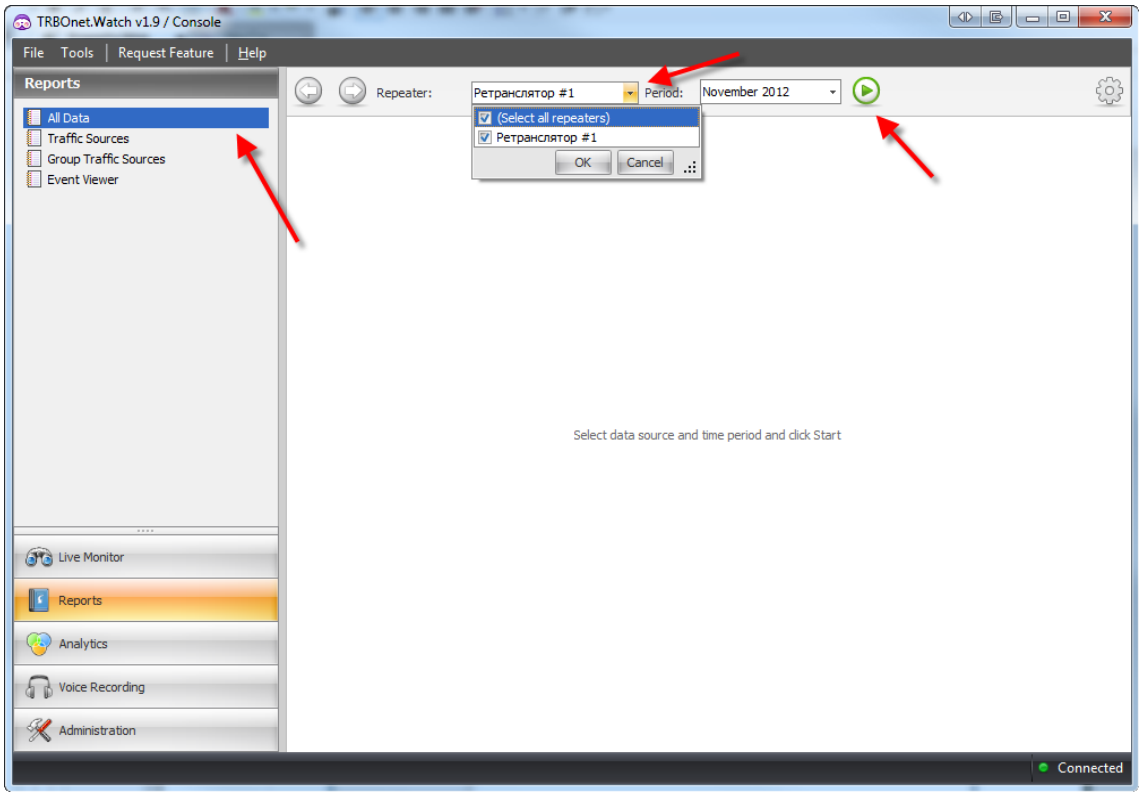
2. Reports interface

The **Reports** interface allows viewing reports in system events.

To generate a report select the report type, specify a system (systems) and month and click



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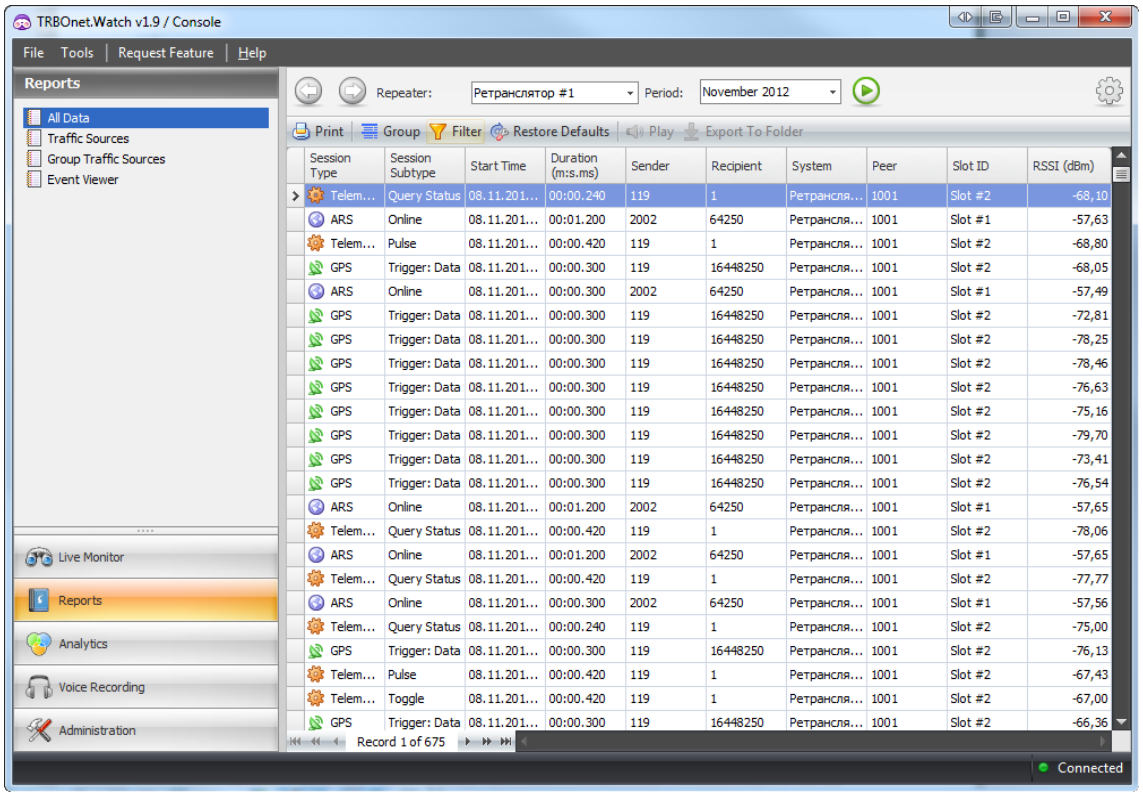
All Data report

The report gives the overview of all data and voice for one month for selected system(s).



In the upper part of the interface there is a toolbar to perform actions to the reports

Print - press **Print** to print the report

Group - press **Group** in the toolbar and drag into the appearing line the header of the column you want to group the data by. You may also group the data by few criteria. To cancel the grouping frag the column header back.

Filter - Press **Filter** and specify the data to filter by in the line that appeared over the column.

Restore Defaults - press to restore the default settings

Play - press **Play** to listen to the voice message

Export to folder- press and choose the folder to save your report in

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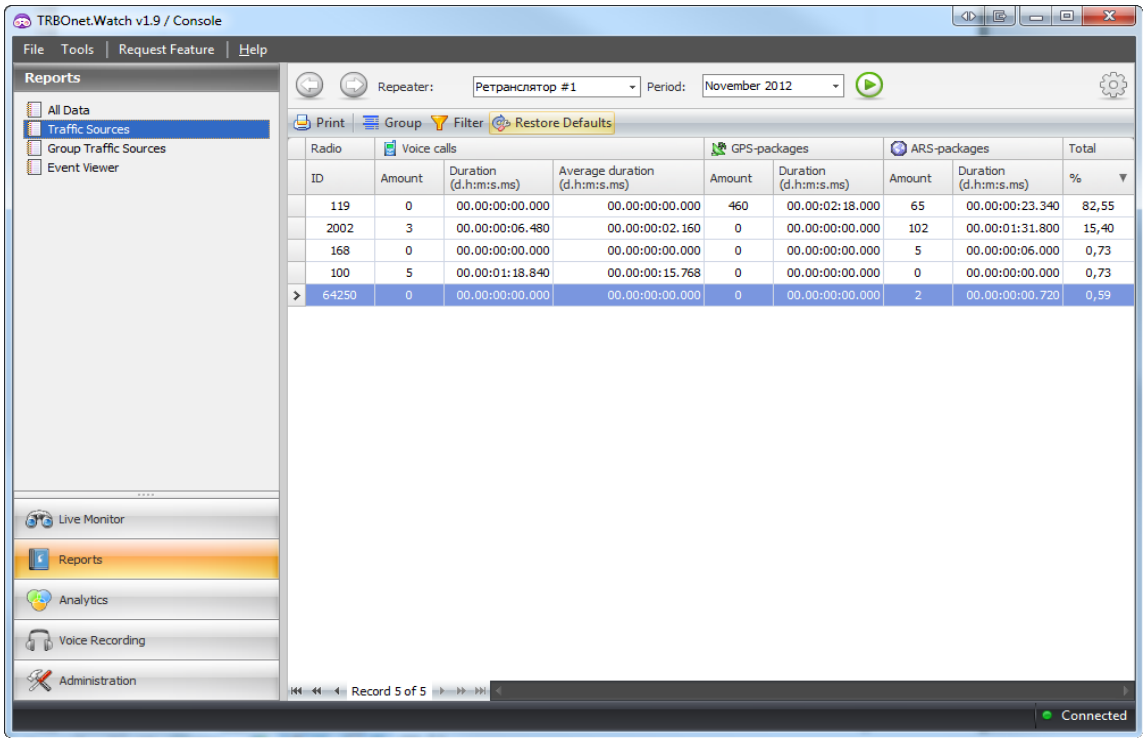
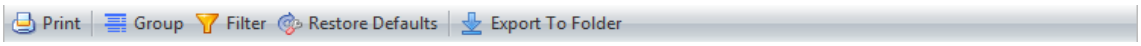
Traffic Sources report

The report gives list of subscribers and information on individual voice and data traffic for each subscriber.


TRBOnet.Watch v1.9 / Console
File Tools Request Feature Help
Reports
All Data
Traffic Sources
Group Traffic Sources
Event Viewer
Repeater: Ретранслятор #1 Period: November 2012
Print Group Filter Restore Defaults
Radio Voice calls GPS-packages ARS-packages Total
ID Amount Duration (d.h:m:s.ms) Average duration (d.h:m:s.ms) Amount Duration (d.h:m:s.ms) Amount Duration (d.h:m:s.ms) %
119 0 00.00:00:00.000 00.00:00:00.000 460 00.00:02:18.000 65 00.00:00:23.340 82,55
2002 3 00.00:00:06.480 00.00:00:02.160 0 00.00:00:00.000 102 00.00:01:31.800 15,40
168 0 00.00:00:00.000 00.00:00:00.000 0 00.00:00:00.000 5 00.00:00:06.000 0,73
100 5 00.00:01:18.840 00.00:00:15.768 0 00.00:00:00.000 0 00.00:00:00.000 0,73
64250 0 00.00:00:00.000 00.00:00:00.000 0 00.00:00:00.000 2 00.00:00:00.720 0,59
Record 5 of 5
Live Monitor
Reports
Analytics
Voice Recording
Administration
Connected

In the upper part of the interface there is a toolbar to perform actions to the reports



Print - press **Print** to print the report

Group - press **Group** in the toolbar and drag into the appearing line the header of the column you want to group the data by. You may also group the data by few criteria. To cancel the grouping frag the column header back.

Filter - Press **Filter** and specify the data to filter by in the line that appeared over the column.

Restore Defaults - press to restore the default settings

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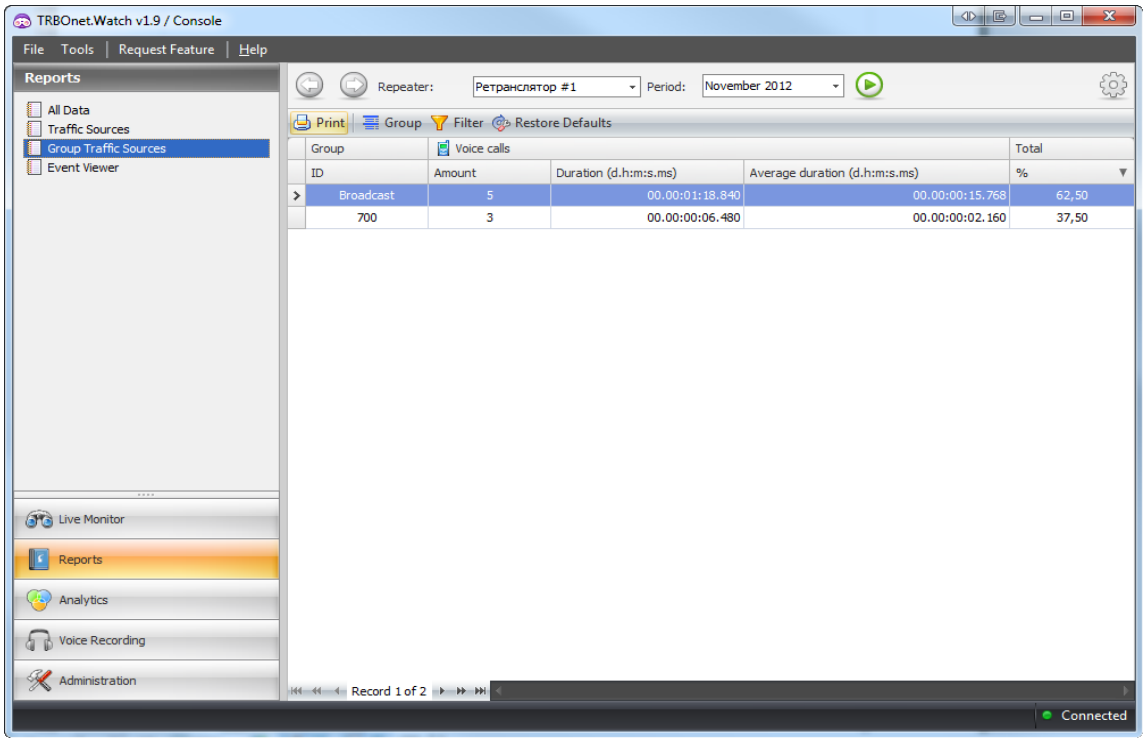
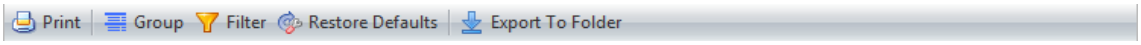
Group Traffic Sources report

The report gives list of call types (group ID's and broadcast calls) and information on voice traffic for each group.



In the upper part of the interface there is a toolbar to perform actions to the reports



Print - press **Print** to print the report

Group - press **Group** in the toolbar and drag into the appearing line the header of the column you want to group the data by. You may also group the data by few criteria. To cancel the grouping frag the column header back.

Filter - Press **Filter** and specify the data to filter by in the line that appeared over the column.

Restore Defaults - press to restore the default settings

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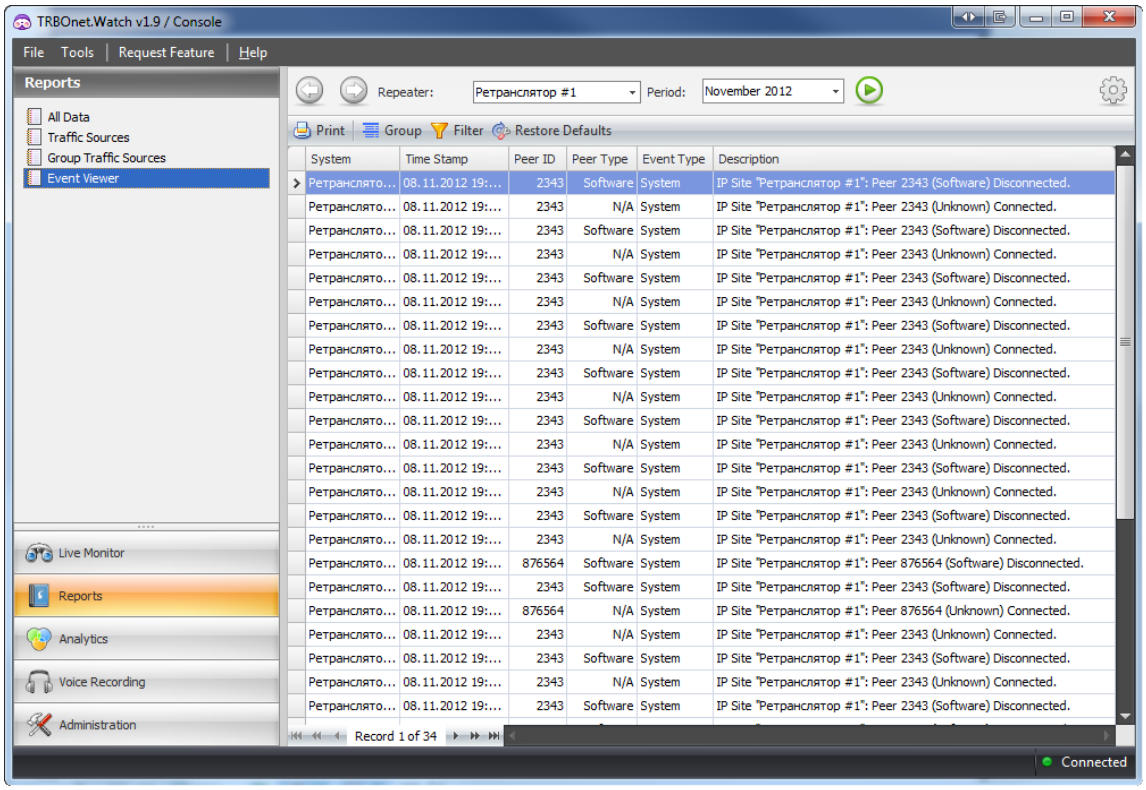
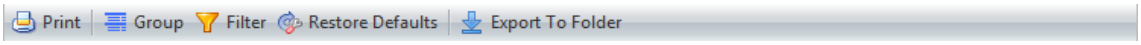
Event Viewer

This reports shows all the events that took place in the repeaters of the selected system.



In the upper part of the interface there is a toolbar to perform actions to the reports



Print - press **Print** to print the report

Group - press **Group** in the toolbar and drag into the appearing line the header of the column you want to group the data by. You may also group the data by few criteria. To cancel the grouping frag the column header back.

Filter - Press **Filter** and specify the data to filter by in the line that appeared over the column.

Restore Defaults - press to restore the default settings

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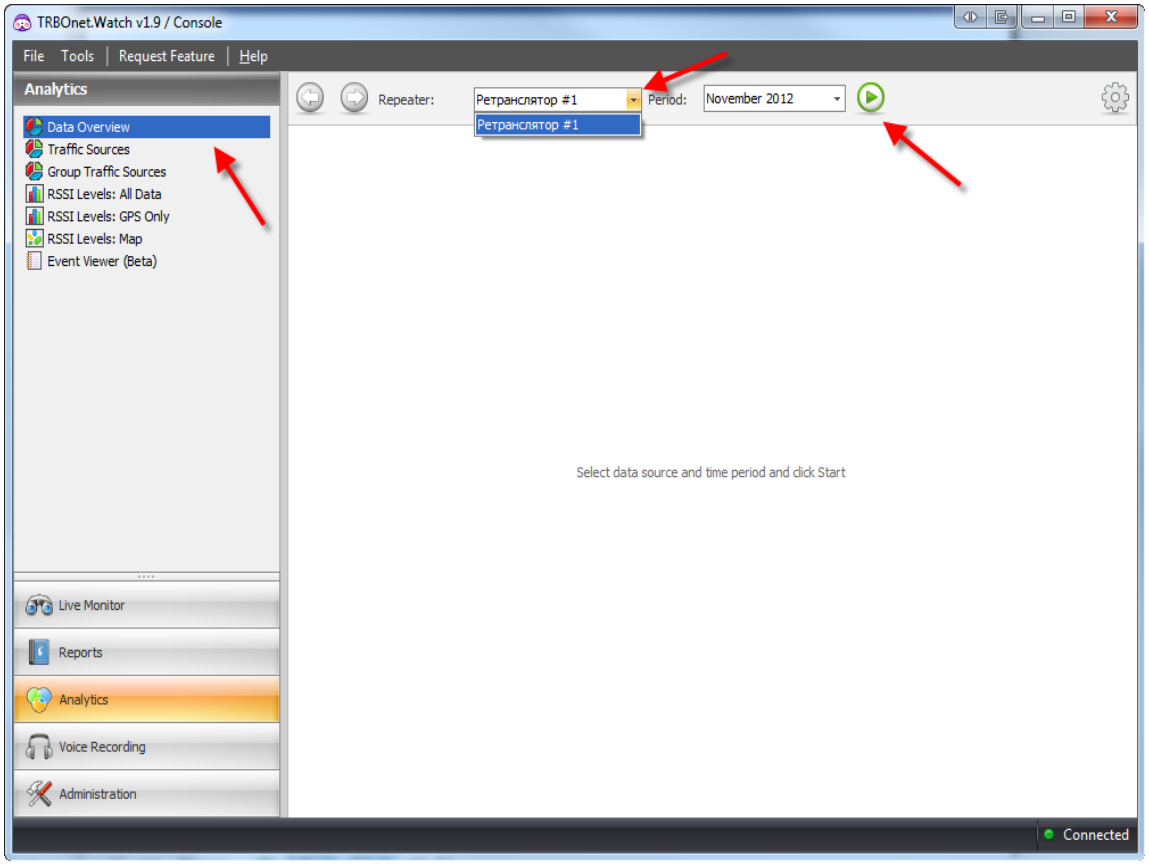
3. Analytics Interface

The **Analytics** interface allows viewing and analyzing the system statistics.

To generate a report select the report type, specify a system and month and click



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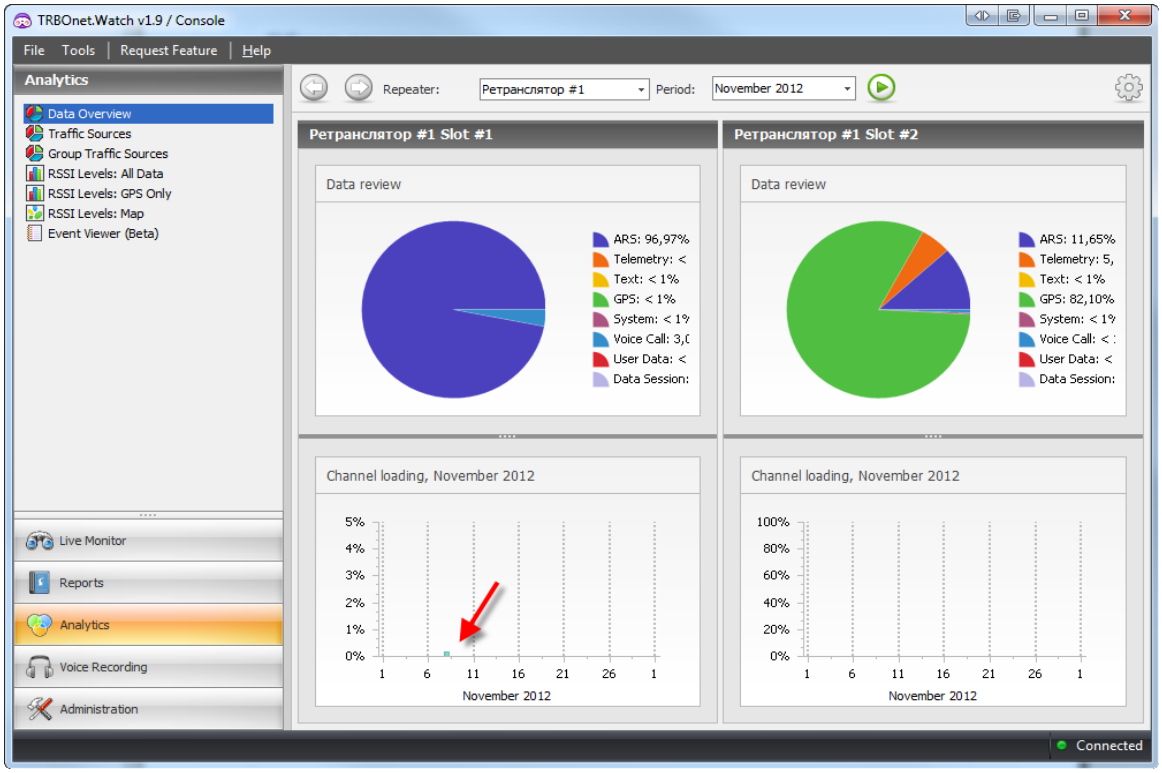
Data Overview

This interface allows viewing the channel loading by days and hours and gives information on traffic according to types of data (Voice, GPS, Registration, Etc)



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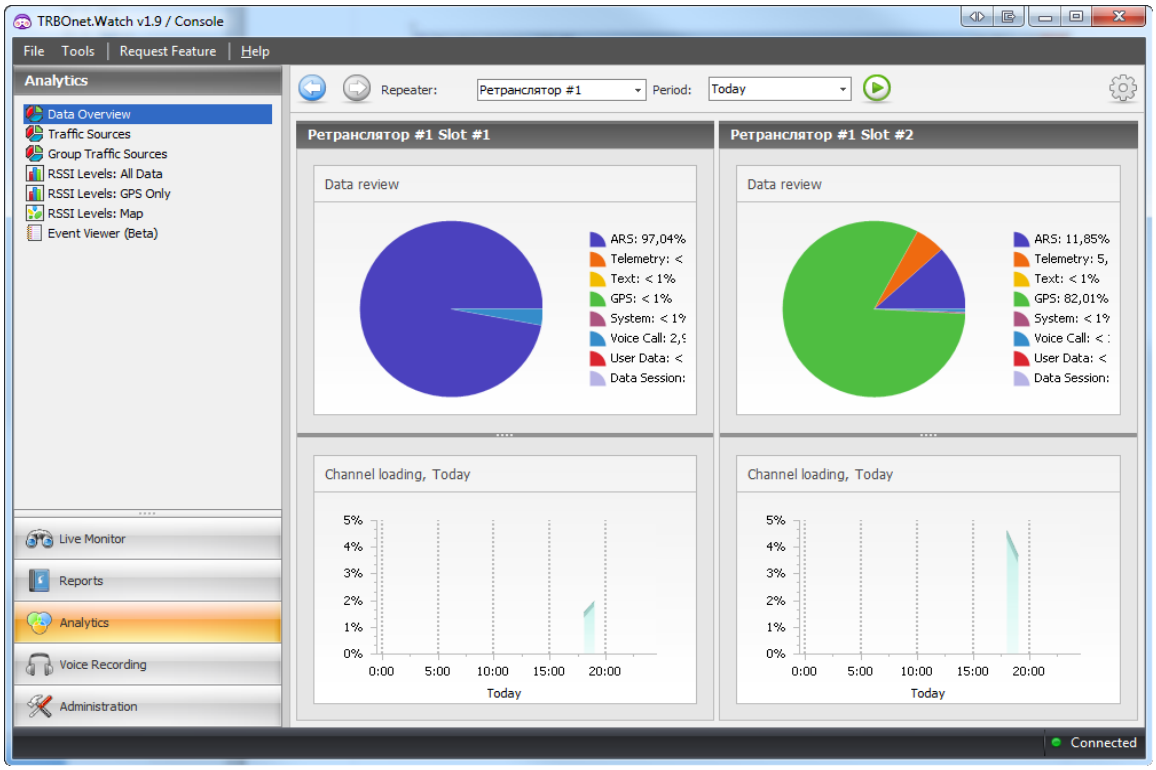
To scale the Channel Loading chart left-click it and use the mouse scroll.

To open a day view left-click a day on the chart.



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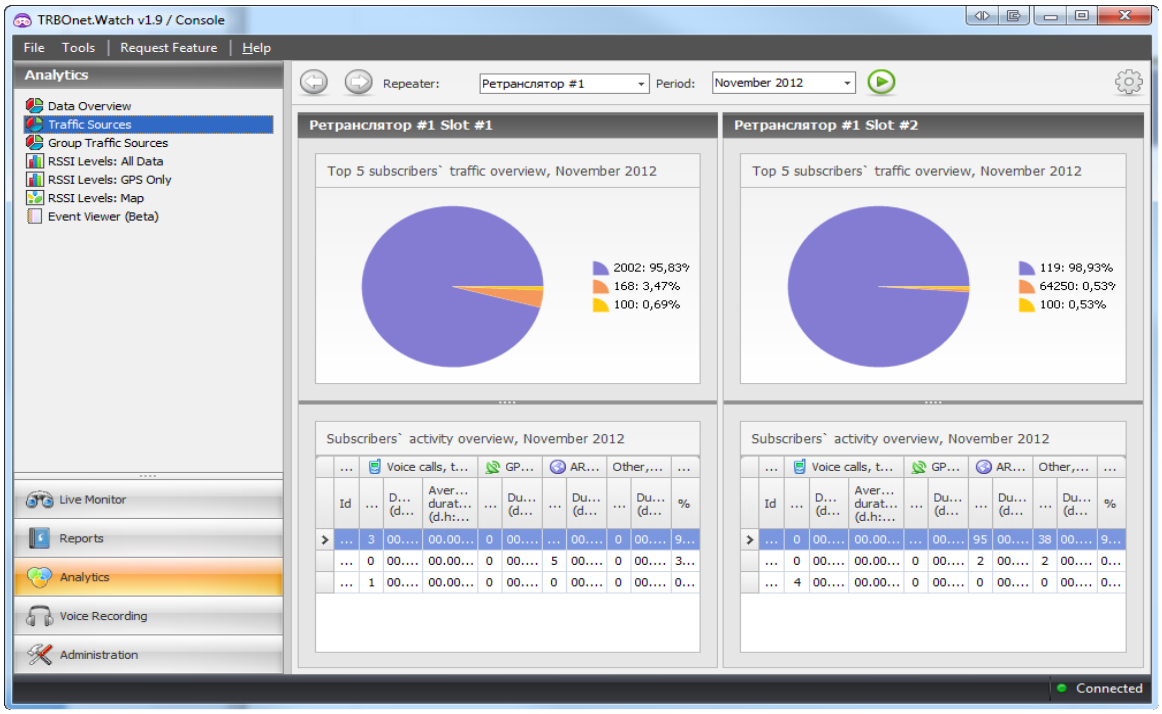
Traffic Sources

The interface allows analyzing amount of traffic from different radios. It gives the list of all radios and information on amount of voice and data traffic for each radio. The user can also see a chart for the top 5 subscribers.



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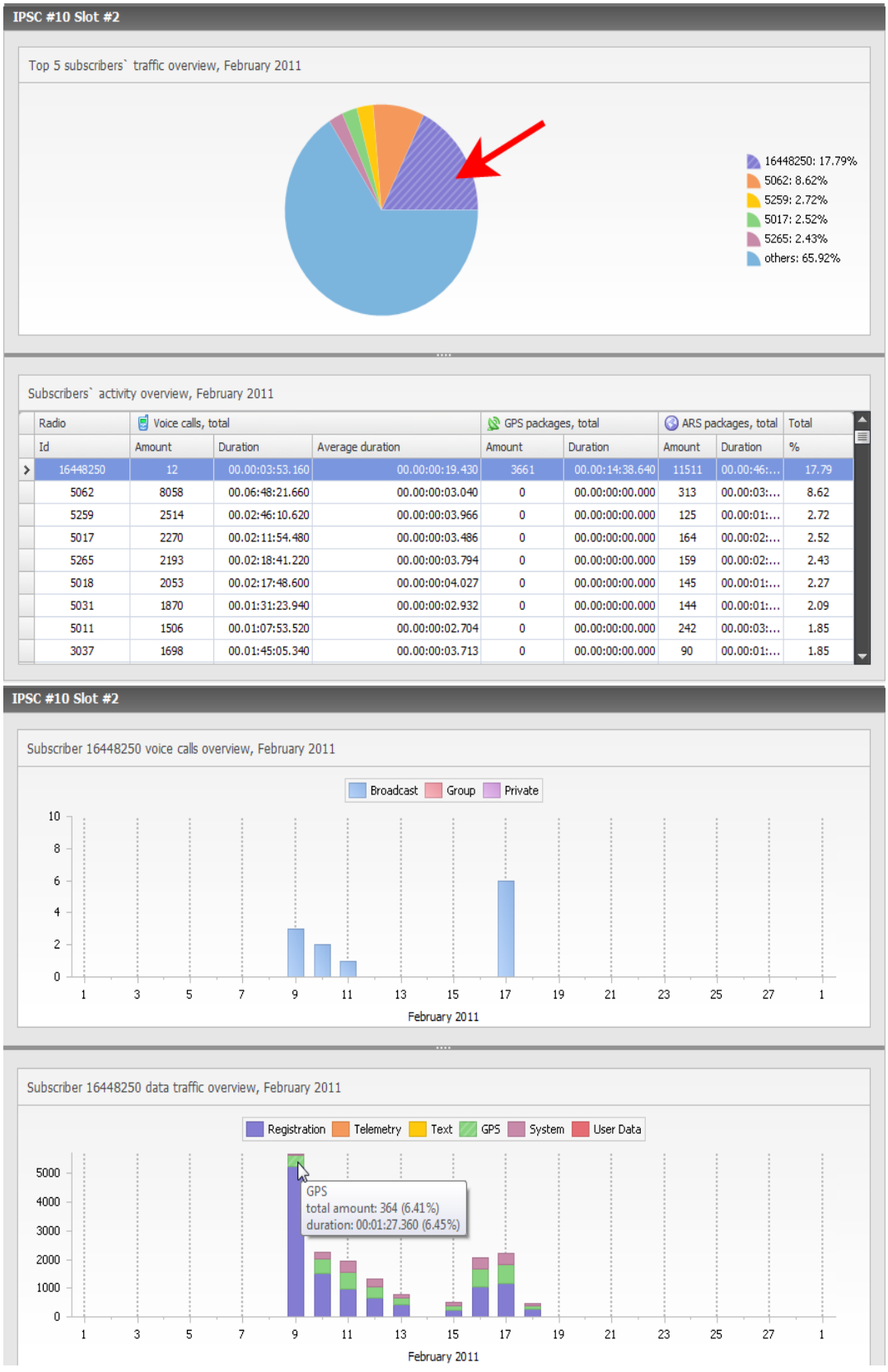
To view statistics for a radio from the "Top 5" chart left-click the respective sector on the chart.



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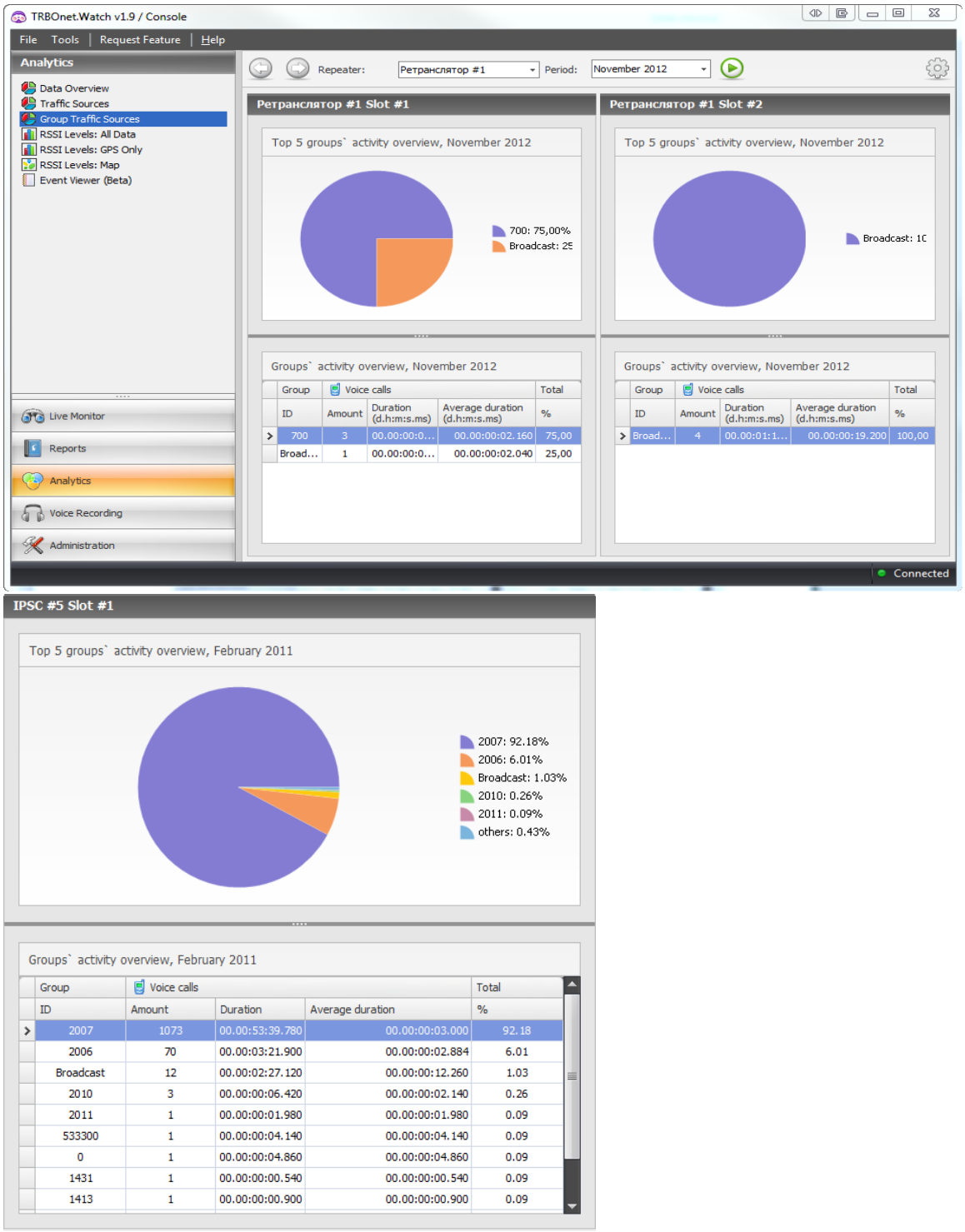
Group Traffic Sources

The interface allows viewing statistics on call types (group and broadcast calls) and information on voice traffic for each group.



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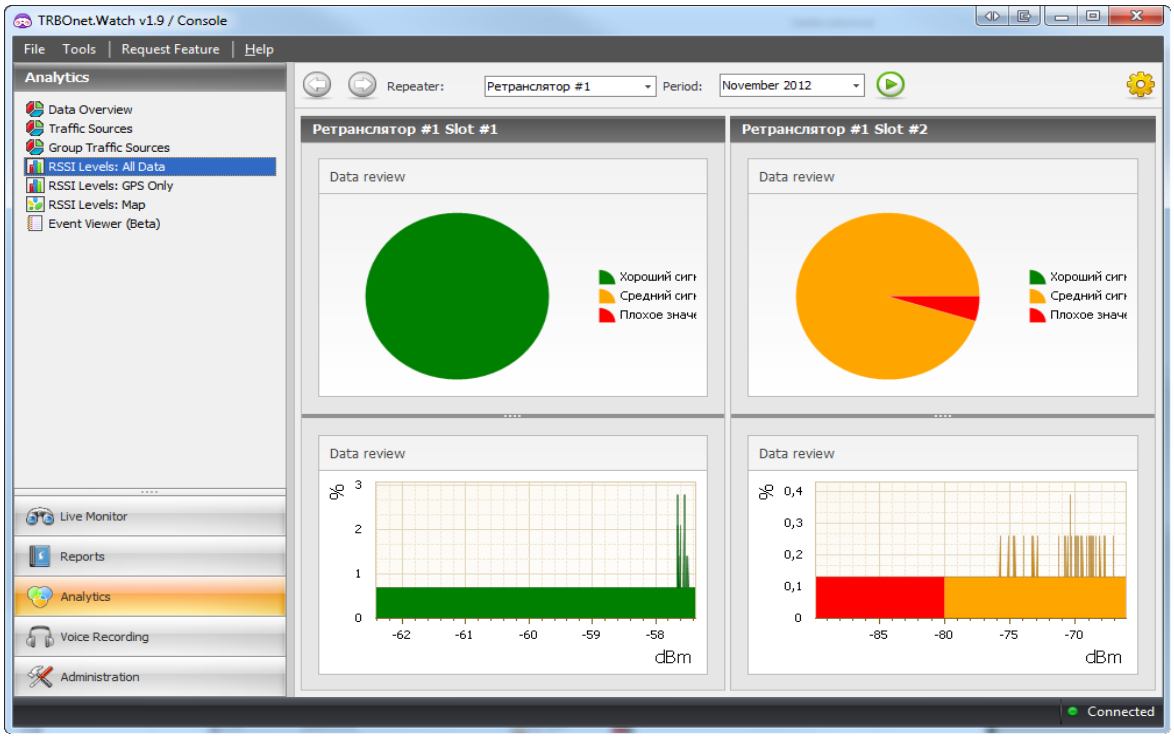
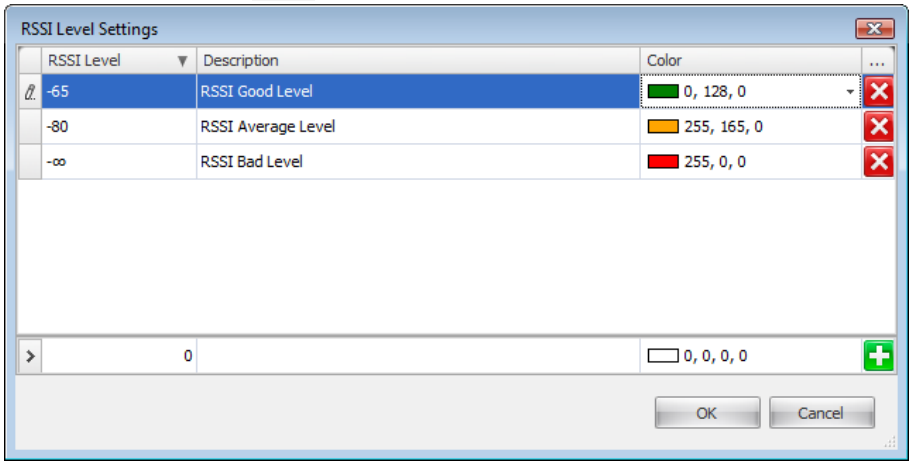
RSSI Levels: Chart

The user can set different RSSI levels and view the statistics on signal strength level (RSSI).



To configure the levels click and set the parameters.



- **RSSI Level** - set the minimum level for the range (for example, -65 means -65 and higher)
- **Description** - Specify a name for the level (e.g. Good or High level)
- **Color** - Click to select a color to indicate the level in charts and on the Coverage Map
- To remove a level from the list click

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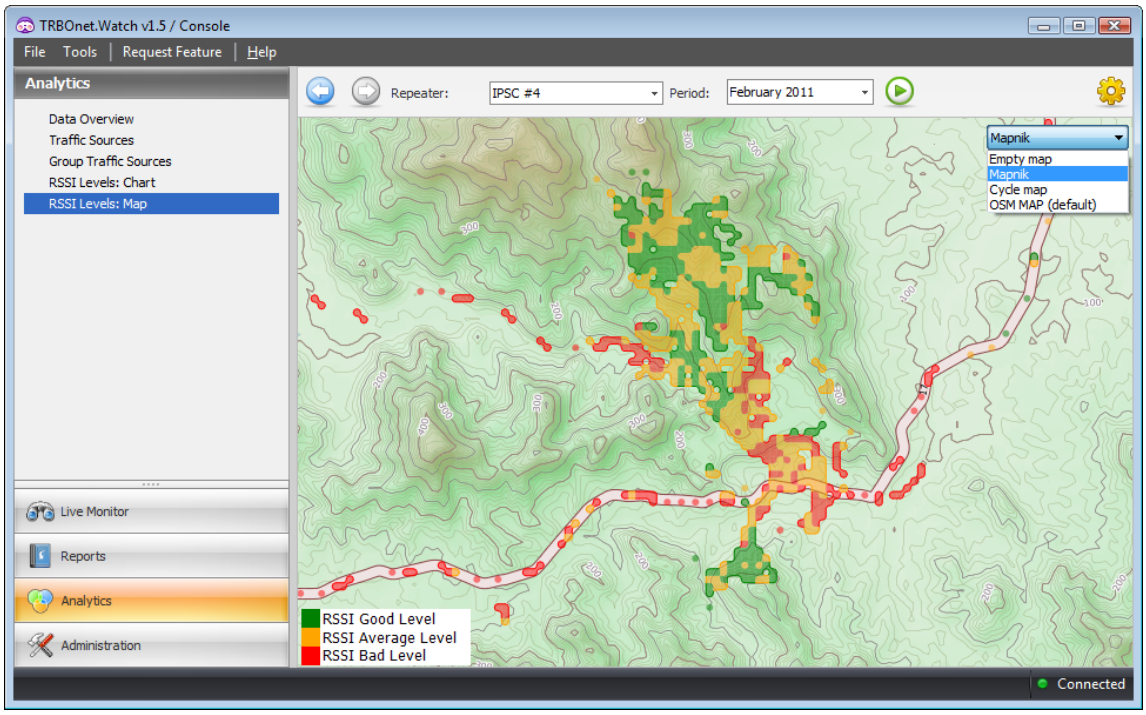
RSSI Levels: GPS Only

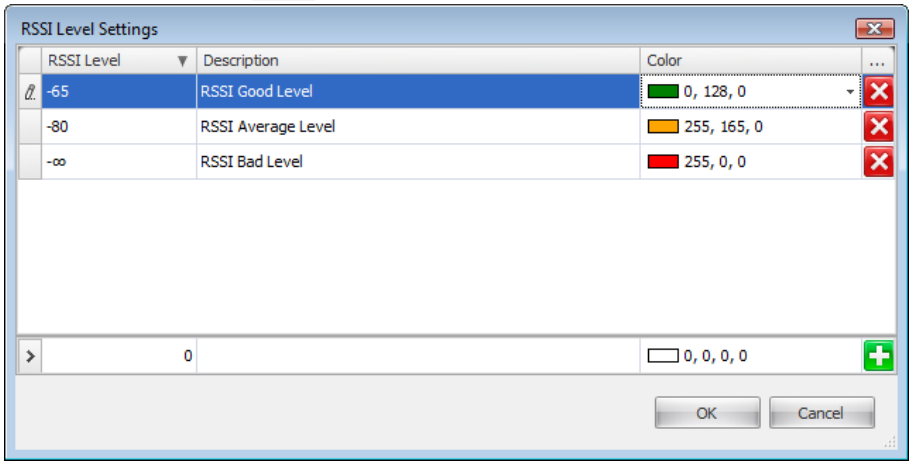
The user can set different RSSI levels and view the statistics on GPS signal strength level (RSSI).

RSSI Levels: Map

The interface allows viewing the Coverage Map according to preset RSSI Levels.



To configure the levels click and set the parameters.



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- **RSSI Level** - set the minimum level for the range (for example, -65 means -65 and higher)
- **Description** - Specify a name for the level (e.g. Good or High level)
- **Color** - Click to select a color to indicate the level in charts and on the Coverage Map
- To remove a level from the list click

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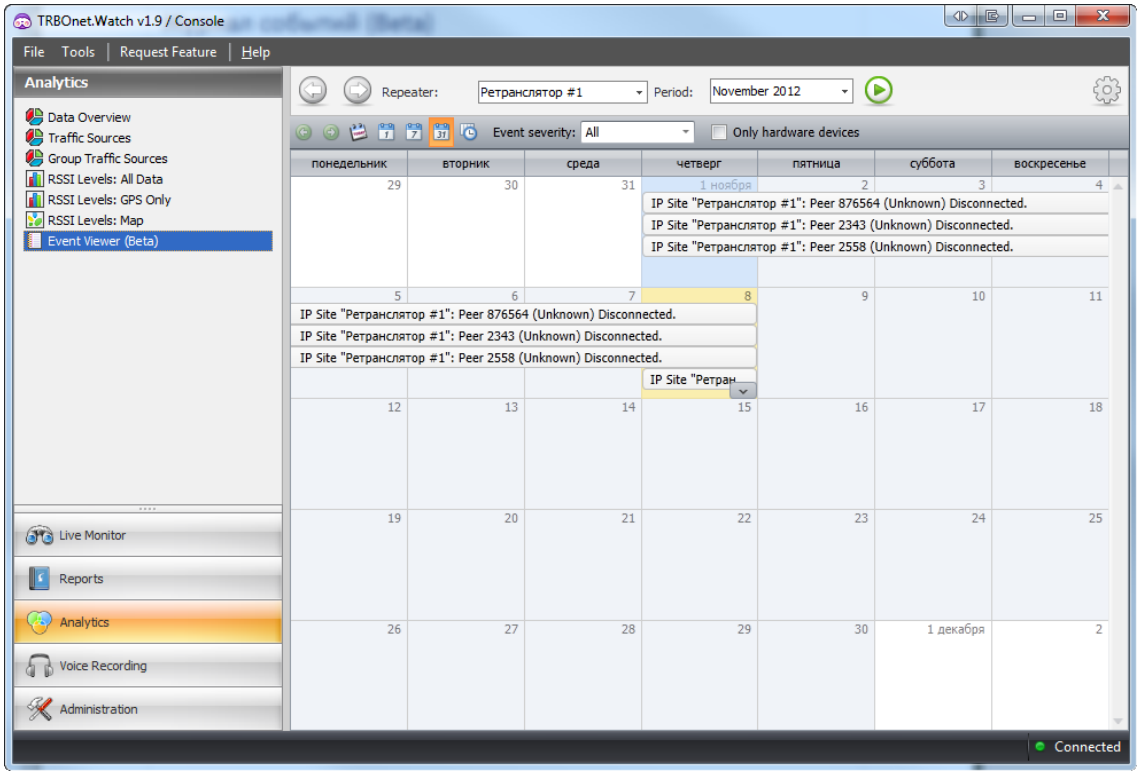
Event Viewer (Beta)

In this interface you may see all the events that took place on the repeaters of the system you selected. The information is structured in the table.



4. Voice Recording

In this interface you may listen to any voice message registered by the system.

To listen to the voice message:

1. Specify its parameters to find it in the system:

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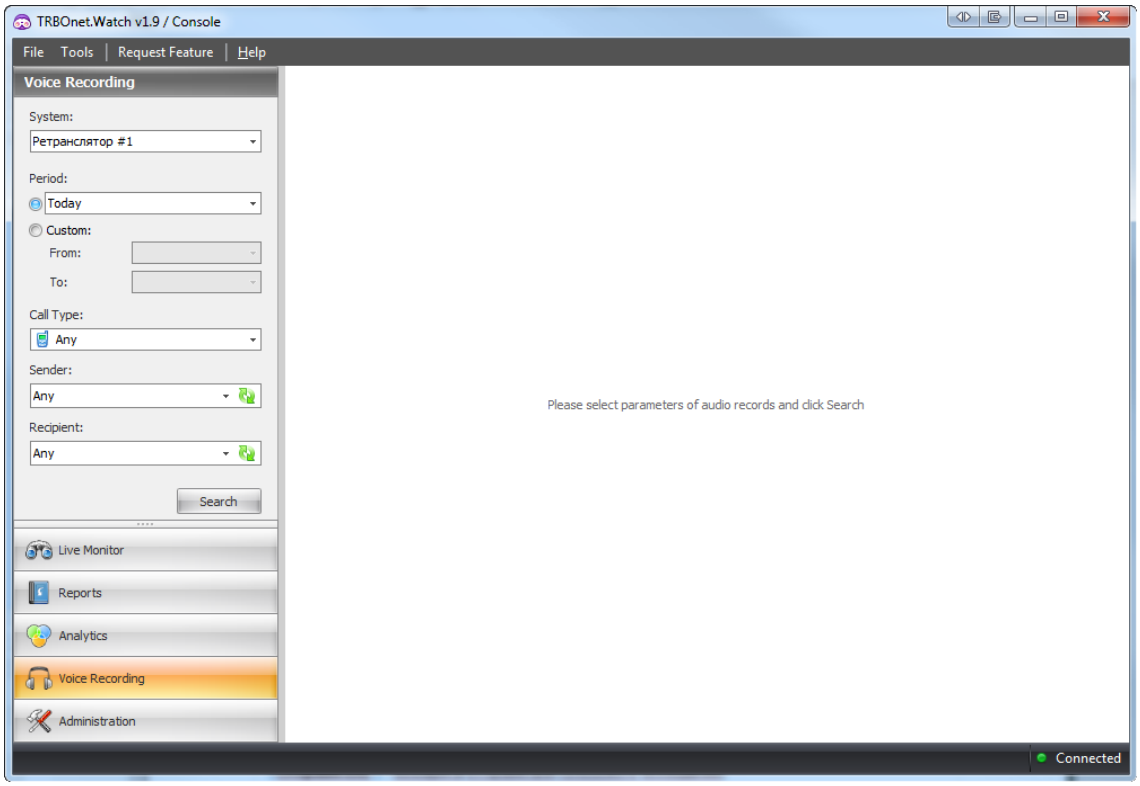

System - choose the system to search the voice message in

Period - choose the day:**Today** or **Other**. In the second case specify the time frame: **From** and **To** .

Call Type - choose the call type to search: **Any**, **All Call**, **Group Call**, **Private Call**.

Sender - choose the sender of the voice message,

Recipient - choose the recipient of the voice message

2. Then press **Search**.

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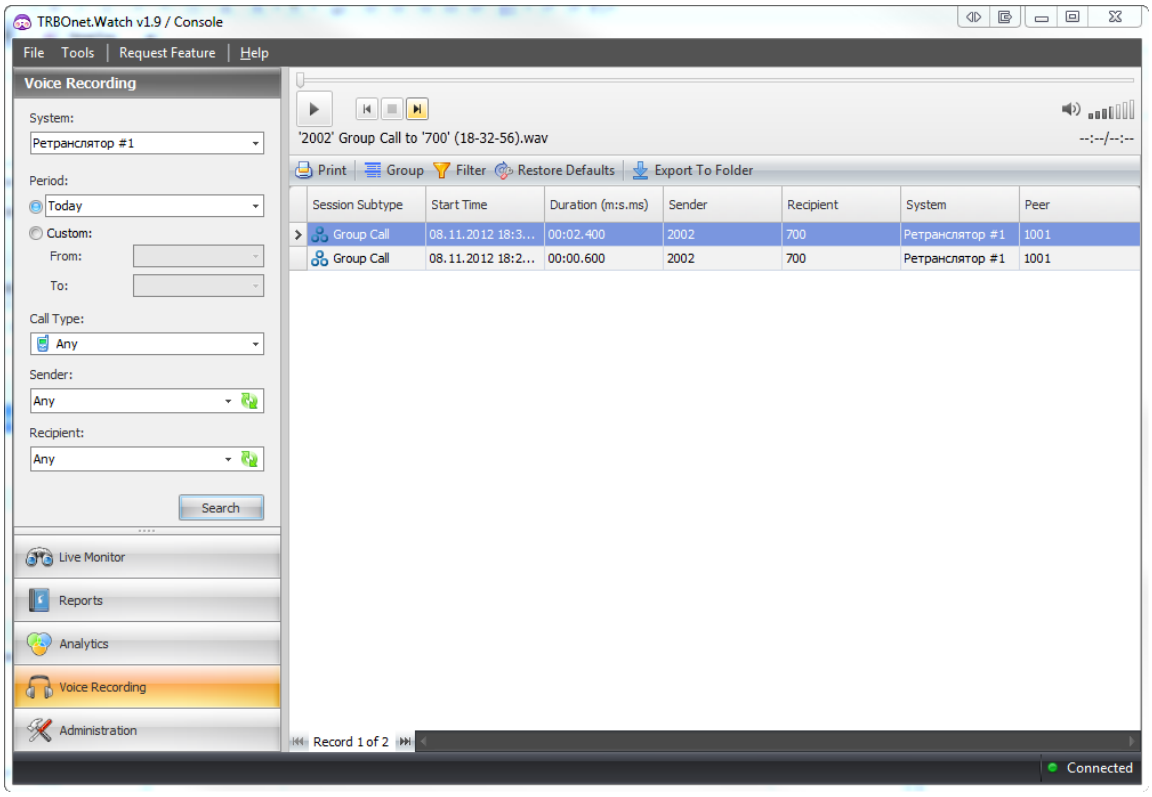

In the upper part of the console there is a toolbar to perform actions to the generated reports.

Print - press **Print** to print the report

Group - press **Group** in the toolbar and drag into the appearing line the header of the column you want to group the data by. You may also group the data by few criteria. To cancel the grouping frag the column header back.

Filter - Press **Filter** and specify the data to filter by in the line that appeared over the column.

Restore Defaults - press to restore the default settings

Export to folder- press and choose the folder to save your report in

To listen to the voice message use media player in the upper part of the console:

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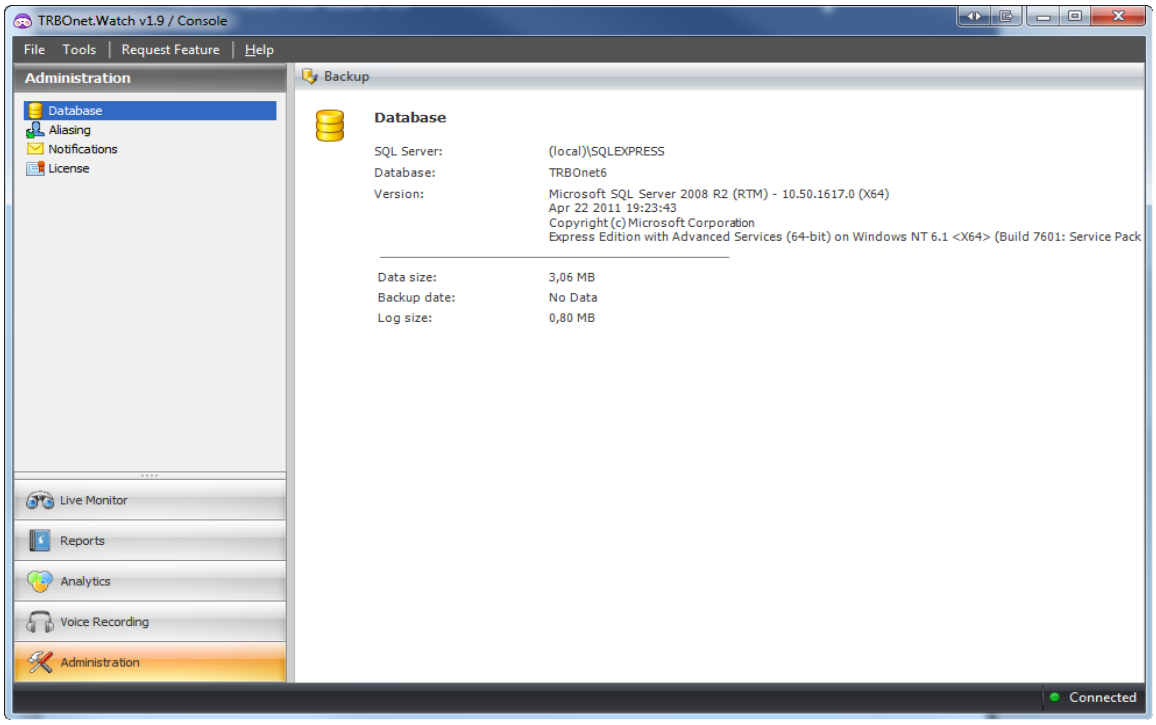
4. Administration Interface

The interface allows viewing information on Database and the current License. The user can also view the system events and configure E-mail notifications on these events.



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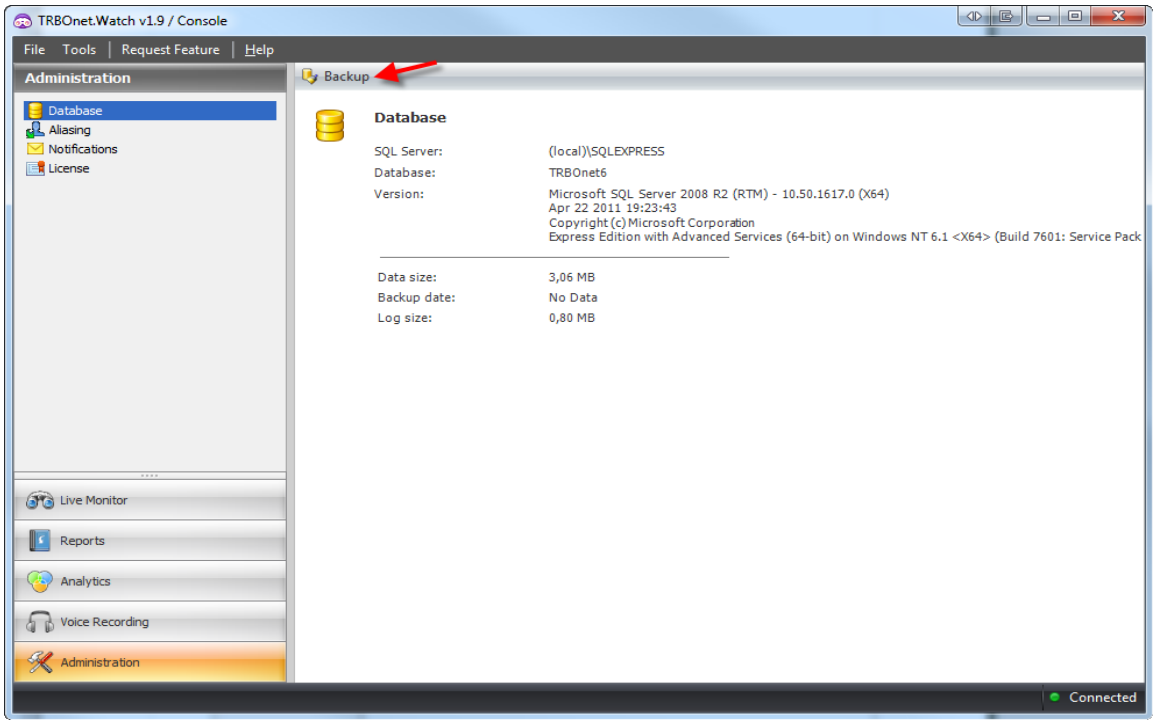
Database

The interface allows viewing Database information and making database backup.
To backup the database click **Backup**.



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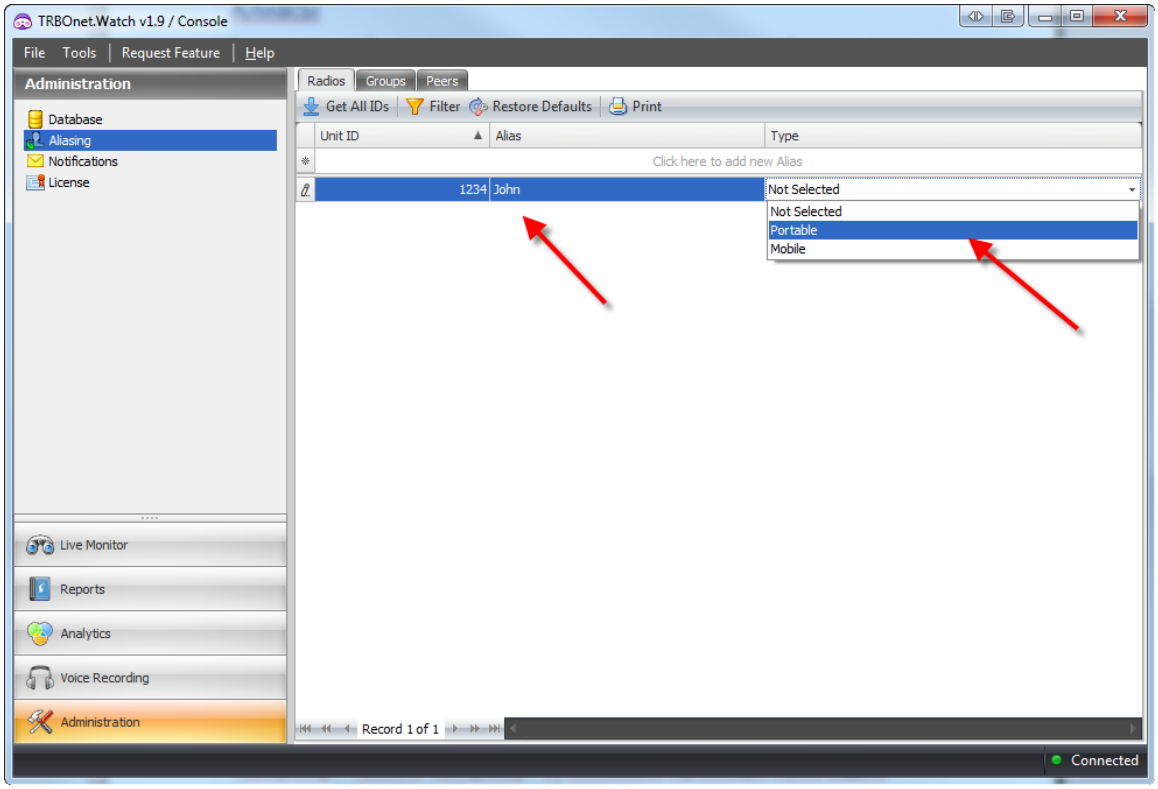
Aliasing

In this interface you may give a name to system's peer and also specify its type.

1. **Radios**

Specify **ID**, **Alias**l and **Type** of the subscriber.



In the upper part of the console there is a toolbar:

Get all IDs - press to see the list of all the subscribers

Filter - Press **Filter** and specify the data to filter by in the line that appeared over the column.

Restore Defaults - press to restore the default settings

Print - press **Print** to print the report

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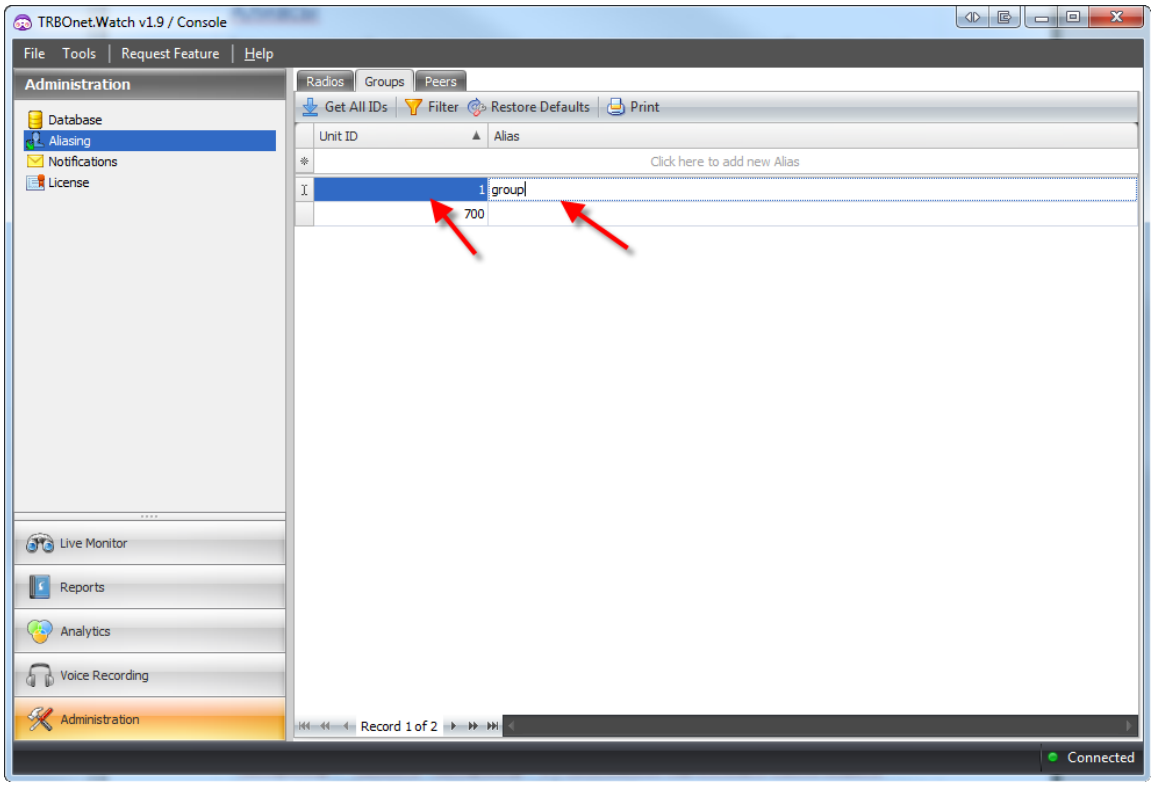
2. **Groups**

Specify the **ID** and **Alias** of the subscriber groups.



In the upper part of the console there is a toolbar:

Get all IDs - press to see the list of all the subscribers groups

Filter - Press **Filter** and specify the data to filter by in the line that appeared over the column.

Restore Defaults - press to restore the default settings

Print - press **Print** to print the report

3. **Peers**

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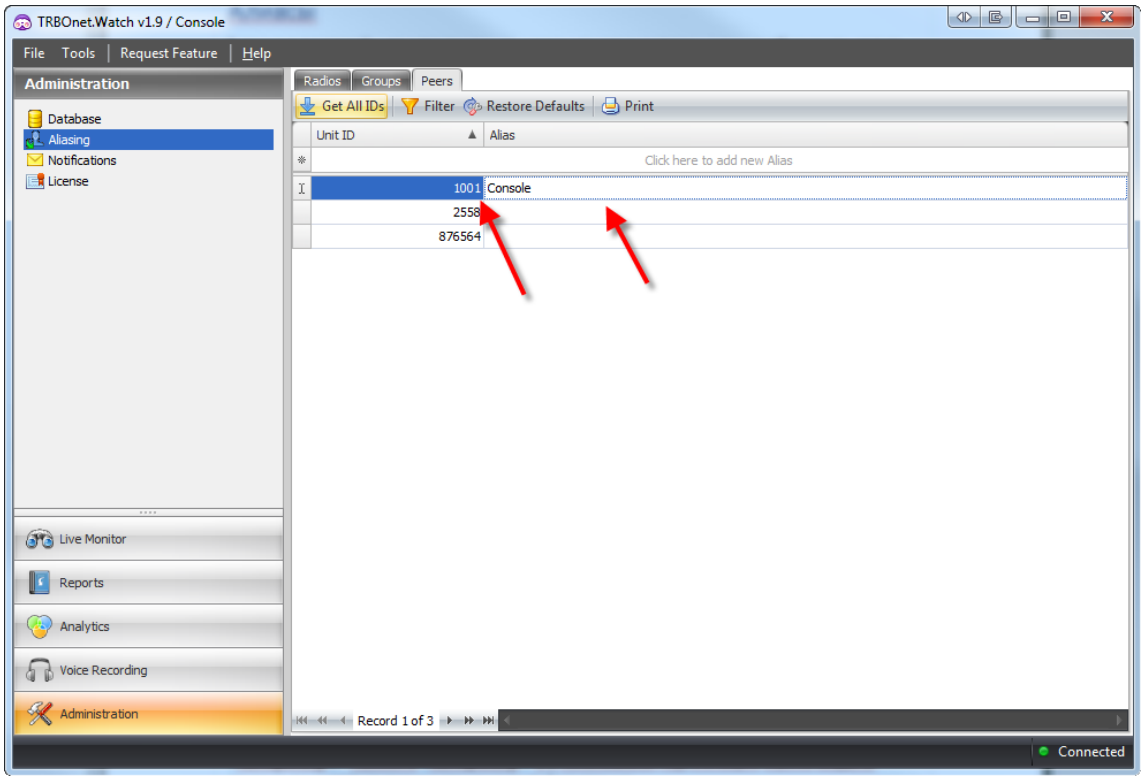
Specify the **ID** and **Alias** of the system peers



In the upper part of the console there is a toolbar:

Get all IDs - press to see the list of all the peers

Filter - Press **Filter** and specify the data to filter by in the line that appeared over the column.

Restore Defaults - press to restore the default settings

Print - press **Print** to print the report

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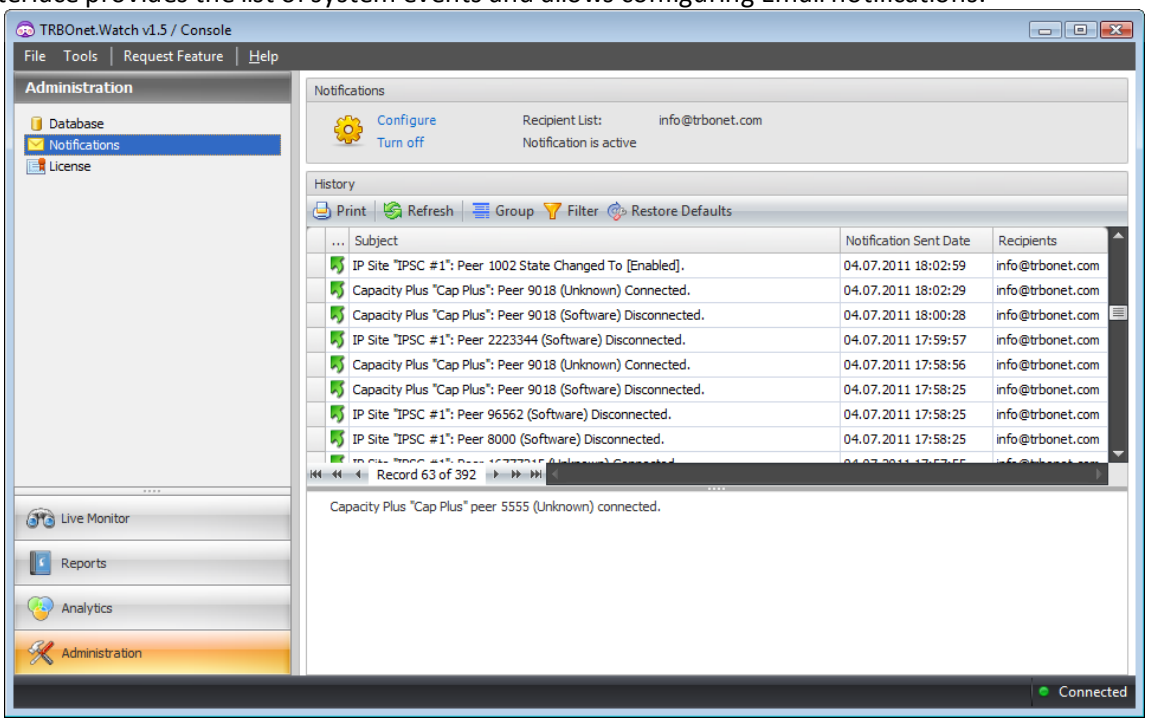
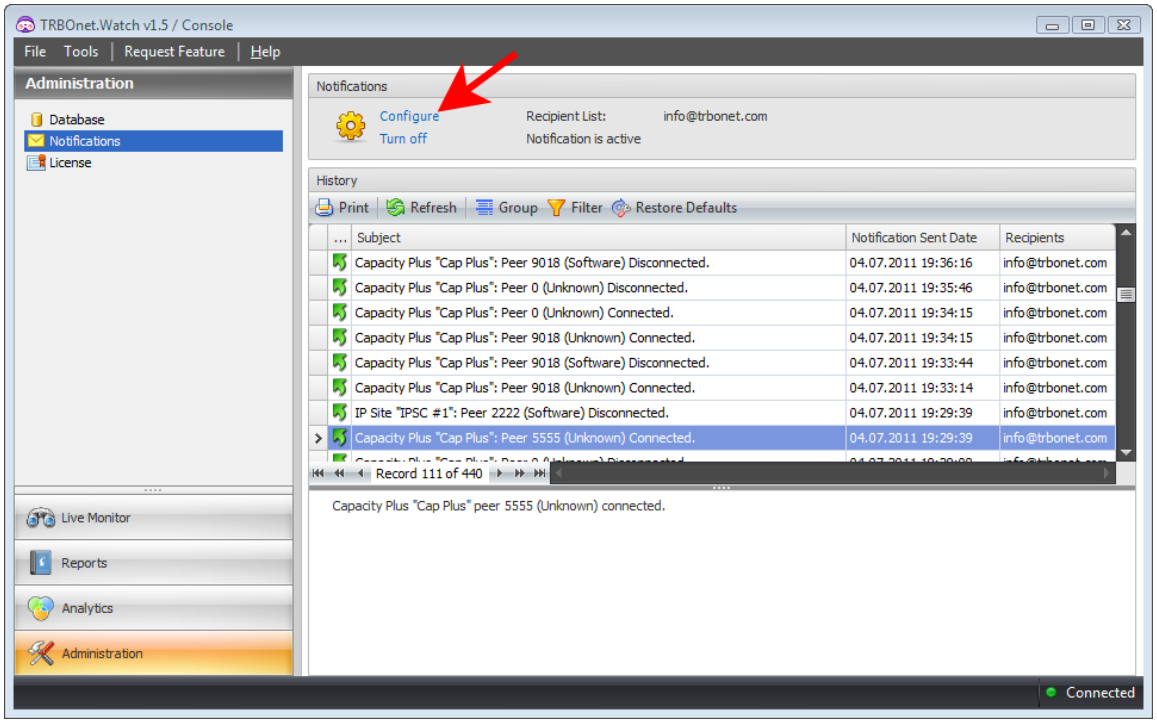
Notifications

The interface provides the list of system events and allows configuring Email notifications.


TRBOnet.Watch v1.5 / Console
File Tools Request Feature Help
Administration
Database
Notifications
License
Notifications
Configure
Turn off
Recipient List: info@trbonet.com
Notification is active
History
Print Refresh Group Filter Restore Defaults
Subject
Notification Sent Date
Recipients
IP Site "IPSC #1": Peer 1002 State Changed To [Enabled]. 04.07.2011 18:02:59 info@trbonet.com
Capacity Plus "Cap Plus": Peer 9018 (Unknown) Connected. 04.07.2011 18:02:29 info@trbonet.com
Capacity Plus "Cap Plus": Peer 9018 (Software) Disconnected. 04.07.2011 18:00:28 info@trbonet.com
IP Site "IPSC #1": Peer 2223344 (Software) Disconnected. 04.07.2011 17:59:57 info@trbonet.com
Capacity Plus "Cap Plus": Peer 9018 (Unknown) Connected. 04.07.2011 17:58:56 info@trbonet.com
Capacity Plus "Cap Plus": Peer 9018 (Software) Disconnected. 04.07.2011 17:58:25 info@trbonet.com
IP Site "IPSC #1": Peer 96562 (Software) Disconnected. 04.07.2011 17:58:25 info@trbonet.com
IP Site "IPSC #1": Peer 8000 (Software) Disconnected. 04.07.2011 17:58:25 info@trbonet.com
Record 63 of 392
Capacity Plus "Cap Plus" peer 5555 (Unknown) connected.
Live Monitor
Reports
Analytics
Administration
Connected

To configure notifications click **Configure** and set the respective parameters. To turn the Email notification on or off click **Turn on** or **Turn off**.


TRBOnet.Watch v1.5 / Console
File Tools Request Feature Help
Administration
Database
Notifications
License
Notifications
Configure
Turn off
Recipient List: info@trbonet.com
Notification is active
History
Print Refresh Group Filter Restore Defaults
Subject
Notification Sent Date
Recipients
Capacity Plus "Cap Plus": Peer 9018 (Software) Disconnected. 04.07.2011 19:36:16 info@trbonet.com
Capacity Plus "Cap Plus": Peer 0 (Unknown) Disconnected. 04.07.2011 19:35:46 info@trbonet.com
Capacity Plus "Cap Plus": Peer 0 (Unknown) Connected. 04.07.2011 19:34:15 info@trbonet.com
Capacity Plus "Cap Plus": Peer 9018 (Unknown) Connected. 04.07.2011 19:34:15 info@trbonet.com
Capacity Plus "Cap Plus": Peer 9018 (Software) Disconnected. 04.07.2011 19:33:44 info@trbonet.com
Capacity Plus "Cap Plus": Peer 9018 (Unknown) Connected. 04.07.2011 19:33:14 info@trbonet.com
IP Site "IPSC #1": Peer 2222 (Software) Disconnected. 04.07.2011 19:29:39 info@trbonet.com
Capacity Plus "Cap Plus": Peer 5555 (Unknown) Connected. 04.07.2011 19:29:39 info@trbonet.com
Record 111 of 440
Capacity Plus "Cap Plus" peer 5555 (Unknown) connected.
Live Monitor
Reports
Analytics
Administration
Connected

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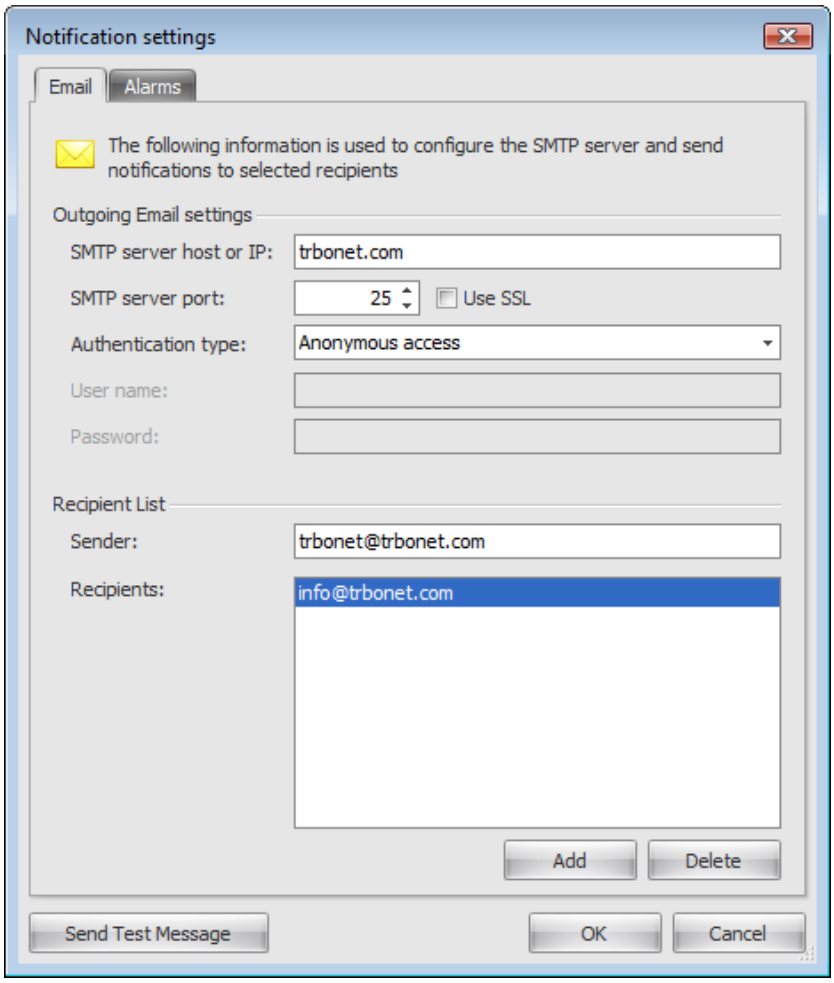
NOTIFICATIONS TAB



- **SMTP server or host IP** - specify your SMTP server.
- **SMTP server port** - the default is 25. Select to use SSL if necessary.
- **Authentication type** - select **Anonimous access**, **Windows authentication** or **Use SMTP user name and password**.
- **Sender** - Specify the email adress to be indicated as sender.
- **Recipients** - Click **Add** or **Delete** to add or remove email addresses.

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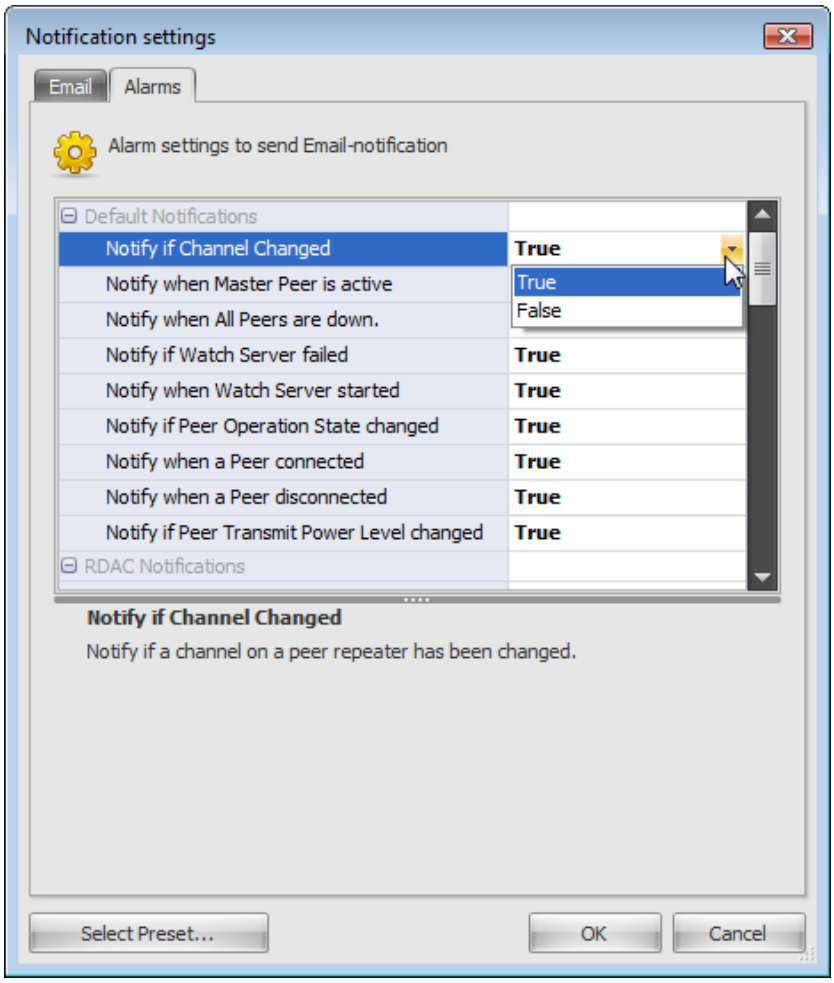
ALARMS TAB



Configure to notify on exact system events.

For **Default Notifications** select **True** or **False** to notify on an event.

For **RDAC Notifications** select **None**, **Detected**, **Released** or **Both** to notify when a problem was detected or released.

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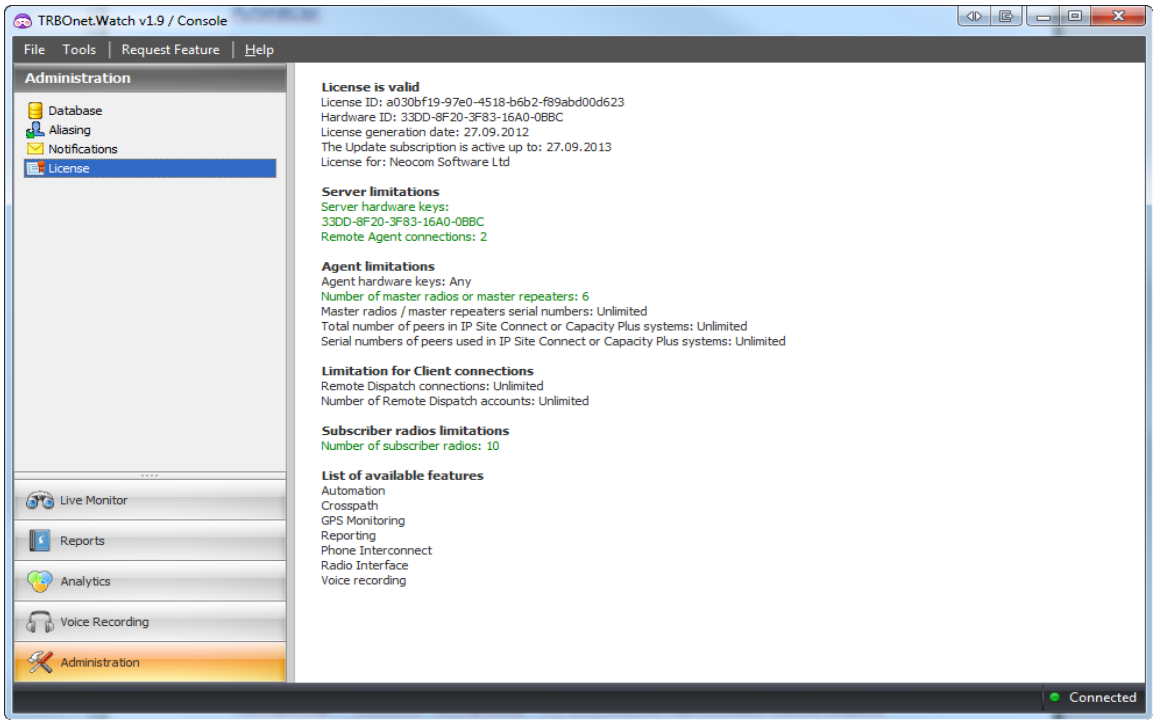
License

The interface gives information on the current product license.



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TRBONET QUICK SUPPORT

TRBOnet has a special tool for quick and efficient remote support. To get quick support you just need to run the TRBOnet_QuickSupport.exe file and tell your TRBOnet supporter your unique ID. After that the supporter will have access to your PC.

How to use TRBOnet Quick support:

1. Download the **TRBOnet_QuickSupport.exe** file here: http://www.trbonet.com/download/tools/TRBOnet_QuickSupport.exe
2. Launch the file. You have your unique ID, the default password is trbonet.com.

3. Contact your TRBOnet supporter and tell your unique ID. Now the supporter can get remote access to your PC.
4. When the supporter starts the connection session, you will see the session window in the bottom-left corner of your desktop.

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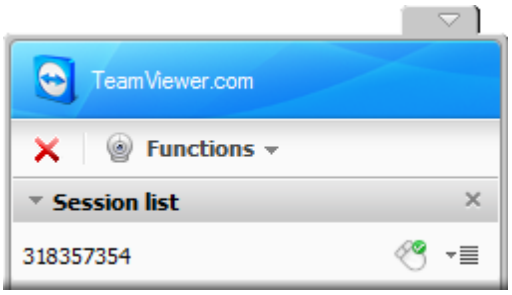
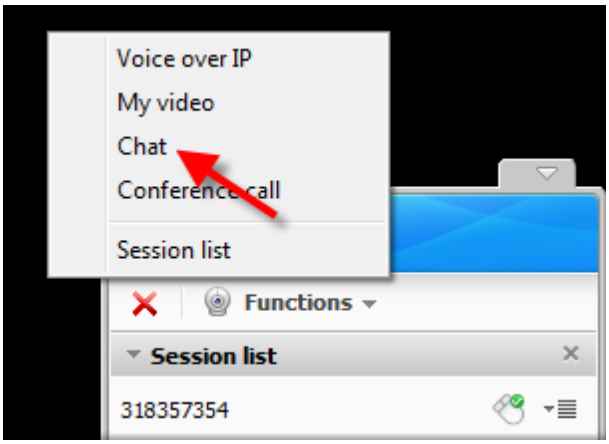
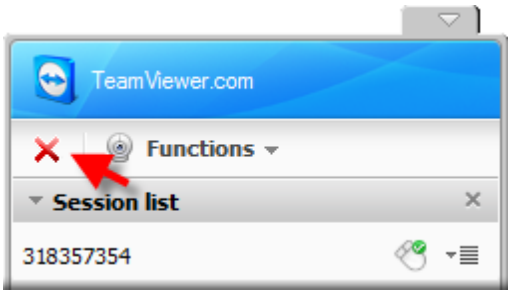


5. Now the supporter has access to your PC. You can use the Chat function in the Session window to communicate with the supporter. For this click Functions and then select Chat in the context menu.



Note: Our support engineers prefer opening a notepad document instead of using the chat in the Session window in order to have opportunity to save the dialog after closing the session.

6. Tell the supporter what help you need and let him make the required changes in your configuration.
7. To close the connection session click the red cross in the Session window.



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